TOPS–20
Commands Reference Manual

AA–5115B–TM, AD–5115B–T1

April 1982

This manual describes all operating system commands available to the nonprivileged user of TOPS–20. For easy reference, the command descriptions are arranged alphabetically.

This manual updates the document of the same name and order number, AA–5115B–TM.

OPERATING SYSTEM:	TOPS–20 (KS/KL Model A), V4 TOPS–20 (KL Model B), V5
SOFTWARE:	EXEC, V4 EXEC, V5

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First Printing, February 1979
Revised, January 1980
Updated, April 1982

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UPDATE NOTICE

TOPS–20
Commands Reference Manual
AD–5115B–T1

April 1982

Insert this Update Notice in the *TOPS–20 Commands Reference Manual* to maintain an up-to-date record of changes to the manual.

Changed Information

The changed pages contained in this update package reflect corrected or enhanced information for TOPS–20 Version 4 and new information for TOPS–20 Version 5.

The instructions for inserting this update start on the next page.

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INSTRUCTIONS
AD–5115B–T1

The following list of page numbers specifies which pages are to be placed in the *TOPS–20 Commands Reference Manual* as replacements for, or additions to, current pages.

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KEEP THIS UPDATE NOTICE IN YOUR MANUAL TO MAINTAIN AN UP-TO-DATE RECORD OF CHANGES.

TYPE AND IDENTIFICATION OF DOCUMENTATION CHANGES.
Five types of changes are used to update documents contained in the TOPS–20 software manuals. Change symbols and notations are used to specify where, when, and why alterations were made to each update page. The five types of update changes and the manner in which each is identified are described in the following table.

The Following Symbols and/or Notations	Identify the Following Types of Update Changes
1. Change bar in outside margin; version number and change date printed at bottom of page.	1. Changes were required by a new version of the software being described.
2. Change bar in outside margin; change date printed at bottom of page.	2. Changes were required to either clarify or correct the existing material.
3. Change date printed at bottom of page.	3. Changes were made for editorial purposes but use of the software is not affected.
4. Bullet (●) in outside margin; version number and change date printed at bottom of page.	4. Data was deleted to comply with a new version of the software being described.
5. Bullet (●) in outside margin; change date printed at bottom of page.	5. Data was deleted to either clarify or correct the existing material.

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PREFACE

The TOPS-20 Commands Reference Manual is an alphabetically-arranged description of all operating system commands (EXEC commands) available to the non-privileged timesharing user of TOPS-20. In this manual each command description contains appropriate parts chosen from the following list:

Function	a brief statement of the command's purpose
Format	a single formalized example, including guidewords, showing where various arguments are needed to complete the command's meaning. Lists of possible arguments follow this example, with explanations of each
Output	explanation, where necessary, of terminal or disk output resulting from the command
Characteristics	description of important features of command use
Hints	suggestions for employing the command effectively
Special Cases	description of command behavior in certain unusual situations
Restrictions	limitations or peculiarities of the command
Warning	powerful functions the command may perform
Effect on Memory and Terminal	changes to memory and to the state of your terminal resulting from the command
Related Commands	names of other commands associated with the given command

Examples several real examples that illustrate the main applications of the command in timesharing use. The characters that you would type are underlined in these examples.

In addition, there are two appendixes for quick reference - a list of commands grouped by function, and an alphabetical summary of commands showing what variety of argument each uses and whether it calls a program or otherwise affects memory.

To use the TOPS-20 Commands Reference Manual properly, you should first read and understand Getting Started With TOPS-20 and the TOPS-20 User's Guide. The occasional summary of information you will find here cannot substitute for the more complete presentations offered in those manuals.

INTRODUCTION

COMMANDS AND ARGUMENTS

A complete TOPS-20 command consists of the command name and usually one or more arguments. In the most general sense, arguments are any combinations of letters, numerals, punctuation marks and other characters that you type after the command name itself to complete the meaning of the command. These arguments can be file specifications, switches, subcommands, and values for switches and subcommands, as well as words and numbers (the arguments to the SET and TERMINAL commands, for example). The following pages contain general information about each variety of argument.

File Specifications

Information and programs for TOPS-20 are usually stored in uniquely labeled files. Therefore, file specifications or "filespecs" are the most common variety of argument to a command. A complete file specification is of the form

```
     dev:<dir>name.typ.gen;att;...;att
```

where

dev: is a device (usually a file structure)

<dir> is a directory name

name is a filename

.typ is a file type

.gen is a generation number

;att is a file attribute

You need file attributes in only a few situations and can usually let dev:, <dir>, and .gen take default values (that is, values defined by the state of your job - see the Special Features section below), so you can give most file specifications in the shortened form name.typ without being unclear. In a few cases, an entire file specification is assumed if you do not supply one when you give the command (for the CREATE and EDIT commands, for example, and for LOAD-class commands - COMPILE, LOAD, EXECUTE, and DEBUG).

Whenever you omit the dev: field of the filespec, the system assumes you mean your connected structure (DSK:). This is the public structure (usually named PS:), which all users must log in to, unless you connect to a directory on another structure by using the CONNECT command. Give the INFORMATION STRUCTURE command if you are unsure of the name for your connected structure.

Whenever you omit the <dir> field of the filespec, the system assumes you mean your connected directory. Unless you have given a CONNECT command, this is your "log-in" directory, the directory on the public structure that you must log in to and which usually has a name composed of your surname, or surname and initials, enclosed in angle brackets. You change your connected directory by giving a CONNECT command. Use the DIRECTORY command to see the name of your connected directory.

When you omit the .gen field of the filespec the system usually assumes you mean the highest generation (largest generation number) of the file. (A few commands, for example, DELETE, RENAME, and DIRECTORY, act on all generations of a file unless you specify a particular generation.) When you create and edit text files, compile and debug programs, or do anything else to produce another generation of a file, the system automatically works with the highest existing generation and labels the changed file with the next higher generation number. Therefore when you omit the generation number in a filespec given as argument to a TOPS-20 command, you are assured of using the most recent version of the file. Although you can override this default action by specifying particular generations of input and output files, it is simplest and most straightforward to allow the defaults to prevail.

Specification of file attributes is optional. You can assign attributes in order to have a file automatically marked for deletion when you log out; to associate a file with a valid account; and so forth. Appendix C lists the available file attributes.

Pressing the ESC key instead of typing a filespec field will usually cause any default for the remaining fields to be printed on your terminal.

There are two characters (called "wildcard" characters) that you can include in any field of a filespec to include all files matching the rest of the filespec. An asterisk (*) fills in for zero or more characters of a field, while a percent sign (%) fills in for a single character only. (However, only the complete field "DSK*:" is allowed as wildcard for the device field, and only the complete field "*" is allowed as wildcard for the generation field.) Therefore you could give the command DIRECTORY *.CBL to find out what source files written in COBOL are in your connected directory, or the command DELETE *.Q* to remove the EDIT program's backup files from your directory.

Switches

Switches are arguments used with LOAD-class (COMPILE, LOAD, EXECUTE, and DEBUG) and EDIT-class (CREATE and EDIT) commands, as well as with Queue-class commands - that is, those affecting entries in processing queues (CANCEL, DISMOUNT, MODIFY, MOUNT, PLOT, PRINT, PUNCH, and SUBMIT).

Switches can also be used with the following program-control commands: DDT, GET, MERGE, R, and RUN. The REWIND command also accepts a switch.

Switches allow you to give quickly many options chosen from a large list, and let you specify to which files they apply when you give more than one filespec in a single command.

Give switches on the same line as the command, typing a slash (/) before each switch. If your command requires more than one line, simply keep typing without giving a carriage return. The system will begin a new line automatically and will read your command as if you had typed it on a single line. Or you may end your command line at any point with a hyphen (-) and carriage return, and continue the command on the next line; the hyphen will not be considered part of your input.

Keep in mind the way each class of command considers switches. EDIT-class commands operate on only one file at a time, and the switches must be given before the input filespec - this is the simplest case.

Queue-class and LOAD-class commands treat switches according to their position in the command line. If you give them before any filespecs, they act as default switches for all filespecs in the command (i.e., they will be in effect unless you override them with later switches applying to individual files only). If you give them after the first filespec, they apply only to the nearest preceding file. In addition, there are a few switches of a different sort for the PLOT, PRINT, and PUNCH commands - these apply to all files no matter where they appear in the command line. These are called job switches (because they affect the entire printing job) and are presented in a separate list in those command descriptions.

A switch is a default if the system assumes it in the absence of others. For LOAD-class commands, /FORTRAN is the default for the four switches (/FORTRAN, /MACRO, /COBOL, and /ALGOL) specifying which compiler to use. The /NOCOMPILE switch is the default for /COMPILE, /NOCOMPILE, and /RELOCATABLE. Most defaults for these commands apply to only a pair of switches, however: the /BINARY, /NOSEARCH, and /NOOPTIMIZE switches are assumed, for example, unless you specify /NOBINARY, /SEARCH, and /OPTIMIZE. The /MAP switch is not a default switch, but there is a default argument for /MAP if you give the switch without specifying an argument.

Default switches for the other classes of command operate similarly. Some are in effect unless you specify their opposite; others are in effect with a default argument unless you specify another argument; still others must be specified to be in effect, but are supplied with a default argument. The list of switches presented with each command description distinguishes these cases. When you give two or more switches of the same kind (for example, /BINARY and /NOBINARY), the last switch given usually prevails.

Subcommands

Subcommands are a variety of argument used chiefly with DIRECTORY-class (DIRECTORY, FDIRECTORY, TDIRECTORY, and VDIRECTORY) commands and with the BUILD command. The COPY and APPEND commands share a small group of subcommands that modify their operation, and ARCHIVE, DELETE, EXPUNGE, SYSTAT, and TAKE each have subcommands. However, you usually employ these last seven commands without resorting to subcommands at all.

If you want to give subcommands to any of the DIRECTORY-class commands, type a comma at the end of the command line just before pressing the carriage return. After the system prompts you with a double at sign (@@) you can give subcommands, one on each line. If you give no subcommands to the DIRECTORY command, the ALPHABETICAL and HEADING subcommands will be in effect, giving an alphabetical listing of files. For a few subcommands, default arguments will be in effect if you give the subcommands without supplying any. You can give subcommands in any order, requesting or declining special categories of information and specifying the format of its presentation. If you give mutually exclusive subcommands (ALPHABETICAL and CHRONOLOGICAL, for example) the last-given subcommand prevails. Note that the FDIRECTORY, TDIRECTORY, and VDIRECTORY commands are equivalent to the DIRECTORY command with certain subcommands automatically included, and can be further modified with other subcommands from DIRECTORY's list. To cancel a DIRECTORY-class command while giving subcommands, type a CTRL/C.

The BUILD command operates differently from DIRECTORY-class commands in putting you automatically into subcommand mode without your typing a final comma on the command line, and in offering a special subcommand to cancel the command while you are typing subcommands.

See the individual command descriptions for more detailed information about subcommands.

Other Arguments

Some command arguments are not introduced by special characters such as slashes or double at signs, but still are particular words, or "keywords," having a special meaning to the system. Give these on the same line as the command itself, leaving at least one space before and between arguments. Certain of these (e.g., the LOGICAL-NAMES argument to the INFORMATION command) are actually composed of more than one word, joined by hyphens so that the system will not interpret them as more than one argument. If the complete command will not all fit onto one line, simply keep typing: the system automatically begins a new line when necessary, but interprets the typing as if it had all appeared on one line. Or you may end a command line at any point with a hyphen (-) and a carriage return, and continue the command on the next line; the hyphen will not be considered part of your input.

A few command arguments must be accompanied by special symbols to be interpreted correctly. Enclose directory names in angle brackets when using them with the CONNECT or ACCESS command, for example; logical names (for DEFINE), device names (used with ASSIGN), and structures and tape sets (used with MOUNT or DISMOUNT) all require a colon at the end. (But note that when supplying what look like structure and tape set names to the related CANCEL command, you are supplying jobnames, and must not include the colon.) If you punctuate a command argument incorrectly, the system will usually print a message reminding you of this.

SPECIAL FEATURES

Defaults

The concept of "defaults," or command arguments assumed when you do not specify a choice, is important for understanding TOPS-20. To speed processing of commands and to help inexperienced users, the system uses defaults when necessary for completing commands that you give. By taking advantage of this defaulting action, you can make the system work faster and more efficiently for you. This manual displays prominently the available choices of command arguments and the established defaults for these.

There are different kinds of default. When you give file specifications as arguments to, say, the PRINT command, the system assumes that you are referring to the highest (most recent) generation of these files in your connected structure and connected directory. By specifying a different structure, directory, or generation you can override this default, but only if you already have the right (established by user membership in a group, perhaps, or by a prior ACCESS command) to do so.

When you give the INFORMATION BATCH-REQUESTS command without further arguments, you are presented with a listing of all requests in the batch input queue. The /USER switch allows you to limit this display to the jobs of the user named. If you give the switch without supplying a user name, your own user name is used as default. (But the /USER switch to the related SUBMIT command has meaning for privileged users only, who can use it to run batch jobs under other user names; for non-privileged users this switch effectively defaults to your own user name.) Only a few command arguments behave like the /USER switch. The /TIME switch to the SUBMIT command is worth noting: by not giving the switch, you set a time limit of 5 minutes; by giving the switch without specifying a time limit, you are setting a 1-hour limit; and you can set any other time limit by supplying it as argument to the switch.

Note that none of the three switches to INFORMATION BATCH-REQUESTS and INFORMATION OUTPUT-REQUESTS (/ALL, /FAST, and /USER) is used as a default: each calls for a listing that differs in some respects from that yielded by the unmodified command. However, the INFORMATION LOGICAL-NAMES command, which allows keywords ALL, JOB, and SYSTEM, has JOB as default for these. The list of arguments associated with each command makes these choices clear.

To discover what default argument (if any) is established for a switch, subcommand, or other argument, press the ESC key instead of giving the argument: the default will be printed on your terminal.

Recognition

"Recognition" input is another feature of the TOPS-20 operating system that speeds up your input, by finishing the typing of a command or command argument for you when you have given only part of it and then prompting your next response.

As soon as you have typed enough of a command or argument to distinguish it from others, press the ESC key: the system will finish the word if possible and prompt your next input with guidewords enclosed in parentheses. (Note that this manual does not show guidewords except in the Format section of each command description.) By pressing the ESC key without beginning an argument you make the system print the default argument if there is one. If the system cannot help you, either because you have not typed enough characters to make your intentions clear or because there is no default, your terminal makes a warning noise - either a ringing bell or high-pitched beep.

Because the ESC key does not produce a printed character, you may be unable to remember exactly where you pressed it when later examining the output from a hard-copy terminal. If you want to avoid this possibility, use the TERMINAL NO RAISE command to make your terminal produce lowercase input, to distinguish it from the uppercase printing of the system.

You cannot use recognition for device names (including file structures), jobnames (e.g., with the MODIFY or CANCEL command) or logical names.

Abbreviation

By abbreviating commands and command arguments, you can further increase the speed with which you give instructions to TOPS-20. The smallest unique abbreviation for a command or argument will stand for the entire word; if there is a default choice for further arguments, the system will assume you want this too. (You can determine sufficient abbreviations by using the ESC key: any correctly recognized abbreviation will stand for the word.) For example, the abbreviated command FD stands for the FDIRECTORY <connected directory> command; I L stands for INFORMATION (ABOUT) LOGICAL-NAMES (OF) JOB.

There are a few cases where non-unique abbreviations will stand for a frequently-used command. CON stands for CONTINUE and not for CONNECT. Similarly, D abbreviates DEPOSIT, E abbreviates EXAMINE, EX stands for EXECUTE, and LOG is understood as LOGIN.

You cannot use abbreviation (or recognition) in a few cases. The names of devices (including file structures), logical names, and jobnames (given, for example, as arguments to the MODIFY or CANCEL command) must be typed in full; and of course passwords cannot be abbreviated or recognized.

Question Marks

Whenever you type a question mark (?) instead of (or even in the middle of) a TOPS-20 command or command argument, the system responds with instructions or a list of possible completions. By using question marks and recognition when you are unsure of the proper command or argument, you can have the system help you during your terminal session.

These features, together with the HELP command, which provides information on various system programs, are valuable supplements to the written documentation for TOPS-20.

DATE-TIME ARGUMENTS

You can specify date and time arguments to many of the TOPS-20 commands. The following sections describe the formats for these arguments.

Date

The examples below show the various formats that are acceptable for the date argument:

```
Jun 30 1981            30 Jun 1981
May 1, 82              1/May/1982
January 000005 75      0005-January-000075
F/13-83                5/17/83
```

If the month and day are both numeric, the first number of the two, if less than 13, is considered to be the month. Otherwise, the second number is considered to be the month. For example:

```
2/15/83                is February 15th
15/2/83                is February 15th
```

You can abbreviate the month to as few characters as possible without causing it to be confused with another month. Thus,

```
O
Jun
Jul
Ja
```

are acceptable abbreviations for October, June, July, and January.

Many commands allow you to give the day of the week or "today" for the date.

If you specify the time along with the date, you must separate the two arguments by at least one space and/or no more than one tab.

Time

For the time argument you can specify:

- time according to a 24-hour clock:

  ```
  /AFTER:17:00:00
  ```

- AM and PM:

  ```
  @SET ALERT 5:00PM
  ```

- the following time zones:

Arguments	Zone	Hour Offset from Greenwich
GST, GDT, GMT	Greenwich	0
AST, ADT	Atlantic	4
EST, EDT	Eastern	5
CST, CDT	Central	6
MST, MDT	Mountain	7
PST, PDT	Pacific	8
YST, YDT	Yukon	9
HST, HDT	Hawaii/Alaska	10
BST, BDT	Bering	11
DAYLIGHT	Daylight time for your zone	
STANDARD	Standard time for your zone	

Examples

```
6:00PM-EDT     is 5:00PM EST
6:00PM-PST     is 9:00PM EST
6:00PM-GMT     is 1:00PM EST
```

Note that a hyphen (-) is required before the zone.

The basic time format is:

```
hh:mm:ss
```

where:

hh	is hours, must be less than 24, and is optional
mm	is minutes, must be less than 60, and is required
ss	is seconds, must be less than 60, and is optional

The colon between hours and minutes is optional.

Examples (based on a 24-hour clock):

```
3        is 00:03:00AM
125      is 1:25AM
14:30    is 2:30PM
25:33    is 00:25:33AM
```

Relative Date-Time Arguments

Many commands accept relative dates and times. You can specify that an event is to occur at a certain amount of time from the current time, from today, or from a certain day of the week. Likewise, you can specify relative times in the past.

Examples

```
@SET ALERT +30        sets an alert for 30 minutes from now

@DIRECTORY,           produces a listing of files that
@@BEFORE TODAY        were created before today's date
```

ACCESS

Function

The ACCESS command obtains ownership rights to a directory and the group rights of its user-group list.

Format

```
@ACCESS (TO DIRECTORY) dev:<directory>
Password:password
@
```

where

dev:<directory> is the directory that you want to access

Default dev: - your connected structure

Default <directory> - the directory (on the specified structure) of the same name as your connected directory

password is the password of the directory (not requested for your log-in directory or a directory of the same name as your log-in directory on a domestic structure)

Characteristics

Capabilities

Your capabilities (such as Wheel, Operator, Confidential) are associated with your log-in user name only. If you give the ACCESS command for a directory whose owner has Wheel capabilities, say, you do not gain these capabilities.

Restrictions

One Directory Per Structure

You can access only one directory at a time on each mounted structure. Each ACCESS command ends any previous ACCESS command (including the implicit access obtained by the LOGIN command) for that structure. If you access another directory on the public structure you give up your own group rights on the public structure. These are restored when you give an ACCESS command for your log-in directory.

Not For Files-only Directories

Because a files-only directory does not have an owner or user group rights, you cannot give an ACCESS command for it. Use CONNECT instead.

Effect on Memory and Terminal

The ACCESS command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

CONNECT	for making a directory your connected directory
END-ACCESS	for surrendering rights to an accessed directory
MOUNT STRUCTURE	for making a structure available for access, and ensuring the continued availability of an accessed structure

Examples

1. Access another user's directory.

```
@ACCESS <HOLLAND>
PASSWORD:______
@
```

2. Access another user's directory so you can copy a file from it to your connected directory.

```
@ACCESS <HOLLAND>
PASSWORD:______
@COPY <HOLLAND>MAX.MEM HOLMAX.MEM
 <HOLLAND>MAX.MEM.1 => HOLMAX.MEM.1 [OK]
@END-ACCESS <HOLLAND>
@
```

3. Access the log-in directory of a user whose group rights you want to borrow.

```
@COPY <MANUALS>REL3A.MEM REL3A.MEM
?DIRECTORY ACCESS PRIVILEGES REQUIRED
@ACCESS <HOLLAND>
PASSWORD:______
@COPY <MANUALS>REL3A.MEM REL3A.MEM
 <MANUALS>REL3A.MEM.4 => REL3A.MEM.1 [OK]
@END-ACCESS <HOLLAND>
@
```

4. Access the directory of a user on another structure. Then examine his directory and copy a file from it.

```
@MOUNT STRUCTURE SNARK:
STRUCTURE SNARK: MOUNTEO
@ACCESS SNARK:<HOLLANO>
PASSWORO:______
@OIRECTORY SNARK:<HOLLAND>

   SNARK:<HOLLANO>
 ACCT.MEM.1
 ACTGEN..1
 COMP.FOR.1
 COMPUT.CBL.1
   .REL.1
 DIFFER.FOR.1
   .QOR.1
 MAIL.TXT.2
 OVERVIEW.MEM.1

 TOTAL OF 9 FILES
@COPY SNARK:<HOLLANO>COMP.FOR
 SNARK:<HOLLANO>COMP.FOR.1 => COMP.FOR.1 [OK]
@ENO-ACCESS SNARK:<HOLLANO>
@OISMOUNT STRUCTURE SNARK:
STRUCTURE SNARK: OISMOUNTEO
@
```

ADVISE

Function

The ADVISE command links your terminal with another user's terminal so that you can give commands to his job. The advisee can still give commands to his job.

Format

```
@ADVISE argument
```

where

argument — is either a user name or terminal line number.

Characteristics

Input to Other Job

For as long as the ADVISE command is in effect, the commands you give affect the advisee's job instead of your own.

Ending Advice

To end an advising link that you have formed between terminals, you must type CTRL/E. This CTRL/E is not echoed on either terminal.

Refused Advice

Ordinarily, you cannot advise a job unless its terminal is set to receive advice. However, if you have Wheel or Operator capabilities enabled, you can advise any job.

Hints

Help During ADVISE

Once you are advising another job, you can type CTRL/^? for a short list of special commands that can now be used to send comments or control characters, or to relink to a terminal that has broken links with yours. (Note: giving the BREAK command does not end advice but merely prevents the advisor's terminal from printing what either user types.)

Special Cases

Advisee Has More Than One Job

If more than one job is logged in under the user name you specify, the system gives you a list of that user's terminal numbers and associated programs to choose from, then prints TTY: to prompt your response. Type your choice of terminal number after the prompt.

Advising a Pseudoterminal (PTY:)

If you try to advise a PTY: the system informs you of this and asks you to confirm with a carriage return.

Restrictions

Compatible Terminals

Unless the terminals involved in an advising link have compatible characteristics (e.g., terminal width, ability to handle tabs and lowercase letters), some information can be lost or overprinted. To avoid this problem, the user of the faster or more capable terminal should adjust his terminal's characteristics, if possible before the ADVISE command is given.

Detached Jobs

You cannot advise detached jobs.

Warning

Talking Between a VT100 and a VT52

If links between VT100 and VT52 terminals are established using an ADVISE (or TALK) command, the VT52 may function improperly during or after the linked interval (e.g., by requiring frequent CTRL/Q commands to print multiple lines of output). Turning the terminal off and then on again (after the linked interval) will correct this problem.

ADVISE (Cont.)

Effect on Memory and Terminal

The ADVISE command does not affect memory and leaves your terminal at the advisee's terminal's command level, controlling his job.

Related Commands

RECEIVE ADVICE	for allowing other users to advise you
REFUSE ADVICE	for preventing other users from advising you
REMARK	for sending comments only
TALK	for linking terminals so that your commands affect only your own job

Examples

1. Advise a user, then immediately type CTRL/E to end advice.

```
@ADVISE D.CROWLEY
 ESCAPE CHARACTER IS <CTRL>E, TYPE <CTRL>? FOR HELP
 D.CROWLEY JOB 51 EXEC

LINK FROM LATTA, TTY 226
 [ADVISING]

CTRL/E [ADVICE TERMINATED]
@
```

2. Advise a user's job and access a directory for him.

```
@ADVISE BONSAVAGE
 ESCAPE CHARACTER IS <CTRL>E, TYPE <CTRL>? FOR HELP
 BONSAVAGE JOB 48 EXEC

LINK FROM LATTA, TTY 226
 [ADVISING]
!I'LL ACCESS THE DIRECTORY FOR YOU, THEN YOU CAN USE IT.
@ACCESS <SARTINI>
Password:_____
@!OKAY, NOW YOU CAN USE IT.
@!Thank you.

 [ADVICE TERMINATED]
@
```

3. Advise another user, demonstrating how to use the FILCOM program.

```
@ADVISE D.CROWLEY
 ESCAPE CHARACTER IS <CTRL>E, TYPE <CTRL>? FOR HELP
 D.CROWLEY JOB 51 EXEC

LINK FROM LATTA, TTY 226
 [ADVISING]
!HERE'S HOW TO COMPARE FILES USING THE FILCOM PROGRAM.
@FILCOM

*=VERCBL.TXT, BAKVER.TXT/A

No differences encountered

*^C
@!SEE?  THE SWITCH AT THE END (/A) MEANS TO COMPARE THEM IN
@!ASCII MODE. DON'T FORGET THE CTRL/C WHEN YOU'RE DONE.
@!THANKS.
@
 [ADVICE TERMINATED]
@
```

4. Advise a user who is logged in at more than one terminal. Choose one of them.

```
@ADVISE LATTA
 TTY25, EXEC
 TTY41, EXEC
 TTY27, EXEC
TTY: 27
 Escape character is <CTRL>E, type <CTRL>? for help
 LATTA Job 22 EXEC

LINK FROM D.CROWLEY, TTY 225
 [Advising]
...
 [Advice terminated]
@
```

APPEND

Function

The APPEND command adds the contents of one or more source files to the end of a new or existing destination file on disk, leaving the original source files unchanged.

Format

```
@APPEND (SOURCE FILE) source filespec(s) (TO) destination filespec,
@@subcommand
```

where

source filespec(s) — is a single file specification, or a series of them separated by commas

destination filespec — is the specification of the destination file on disk; this can be a new file.

@@subcommand — means that after a final comma you can type an optional keyword, modifying the mode or format of information transfer, as described below

APPEND Command Subcommands
(when used with the paper tape reader - PTR:)

ASCII PARITY
NOPARITY — specifies that the files being appended are written in ASCII mode, with 36-bit words each consisting of five 7-bit bytes and a parity bit; the PARITY argument is not currently in use; NOPARITY (the default) means that the eighth hole of the paper tape is never punched.

BINARY — specifies that the files being appended are composed of 36-bit words, each consisting of six 6-bit bytes, with the seventh hole of the paper tape set always to 0 and the eighth hole set always to 1; causes a checksum calculation.

BYTE n — specifies that the byte size of the destination file is to be n (any decimal number). If you do not give the BYTE subcommand, the destination file will have the same byte size as the source file.

IMAGE — specifies that the files being appended are composed of 36-bit words, each consisting of one 8-bit byte; the 28 most significant bits are lost on output.

IMAGE BINARY — same as BINARY, but lacking the checksum

APPEND Command Subcommands
(when used with devices other than the paper tape reader)

ASCII {PARITY
NOPARITY} — specifies that the files being appended are written in ASCII mode, with 36-bit words each consisting of five 7-bit bytes and a parity bit; the PARITY argument is not currently in use; NOPARITY (the default) means that the least significant bit is set to 0 on input and is lost on output.

BINARY — calls for a direct transfer of data in 36-bit bytes

BYTE n — specifies that the byte size of the destination file is to be n (any decimal number). If you do not give the BYTE subcommand, the destination file will have the same byte size as the source file.

IMAGE — same as BINARY

IMAGE BINARY — same as BINARY

Output

As each file is appended, the system prints its specification and the word [OK]. Also, if recognition is used on the destination file specification, the system prints its status (Old generation, New generation, New file, or Superseding, for disk files; or OK, if the files are appended to a non-disk device).

Characteristics

Files Appended in Order Specified

The APPEND command attaches source files to the destination file in the order you specify them; the contents of the last specified source will appear at the end of the destination file when APPEND is finished.

APPEND (Cont.)

Subcommands Optional

For most purposes you do not need to use subcommands when transferring information with the APPEND command. These subcommands, specifying the format of the appended files, are required only when using certain devices (for example, devices of the form MTn: (tape drives) using labeled tapes, or PTR: (paper tape reader)) or under particular conditions (for example, when transferring files over network facilities). If you are appending information from disk files or from your terminal and you do not use any subcommands, the data will be appended as written, whether in a standard format (usually ASCII or binary) or not.

Special Cases

Wildcard Characters

Wildcard characters (* and %) can be used in source file specifications only. The files are then appended in alphabetical order.

Appending Information from your Terminal

If you type TTY: in place of source file specifications, the system appends any characters you then type (after completing the command itself), until you give a CTRL/Z to return your terminal to TOPS-20 command level. CTRL/U, CTRL/R, CTRL/W, and the Delete key can be used to edit the current line of terminal input.

Restrictions

Source Files With Differing Formats

You can use the APPEND command to transfer data from a magnetic tape, terminal, card reader, paper tape reader, or other device to disk files. but if source files written in differing formats are specificied within the same command, some data can be lost in the transfer.

Mixing Sequenced and Unsequenced Files

Source files created by the EDIT program should not contain sequence numbers when they are appended. Mixing files that contain sequence numbers with files that do not will cause EDIT to function improperly if used on the resulting file.

Appending to Archived Files

You can append the contents of an archived file to another file, by specifying it as the first (or source) argument of an APPEND command. You can then edit the resulting file, because it does not gain archive status although part of its contents are the same as those of the archived file; the archived file remains unchanged. However, you cannot give the specification of an archived file as the second (or destination) argument of an APPEND command, as this would change the file's contents.

Effect on Memory and Terminal

The APPEND command does not affect memory, and leaves your terminal at TOPS-20 command level.

Related Commands

COPY   for making copies of files

Examples

1. Use the APPEND command to join two files.

```
@APPEND FORT.FOR FIL.FOR
 FORT.FOR.8 [OK]
@
```

2. Append two files to the end of a third file.

```
@APPEND FORT.FOR, GORT.FOR GIL.FOR
 FORT.FOR.8 [OK]
 GORT.FOR.6 [OK]
@
```

3. Access a directory and append a file from it to a file in your connected directory.

```
@ACCESS <MANUALS>
Password:______
@APPEND <MANUALS>REL3A.MEM REL3A.MEM
 <MANUALS>REL3A.MEM.4 [OK]
@END-ACCESS <MANUALS>
@
```

APPEND (Cont.)

4. Use a wildcard character (%) to append several files to the end of another file.

   ```
   @APPEND %ORT.FOR HIL.FOR
    FORT.FOR.8 [OK]
    GORT.FOR.6 [OK]
    HORT.FOR.3 [OK]
    MORT.FOR.2 [OK]
   @
   ```

5. Use a wildcard character with the APPEND command to create a new file.

   ```
   @APPEND *.TXT BACKUP.TXT
    MAIL.TXT.1 [OK]
    NEWRUN.TXT.1 [OK]
    NX.TXT.1 [OK]
   @
   ```

6. Append a message from your terminal to the beginning of the file created in Example 5. Use the symbolic generation number -1 to specify this action.

   ```
   @APPEND TTY:,BACKUP.TXT BACKUP.TXT.-1
    TTY:

   !THIS IS A BACKUP FILE FOR ALL TEXT FILES.
   ^Z

    BACKUP.TXT.1   [OK]
   @
   ```

Function

The ARCHIVE command asks that a permanent off-line copy of specified files be made on magnetic tape, and prevents the disk copy (if retained) from being modified.

Format

```
@ARCHIVE (FILES) filespec,...,
@@subcommand
```

where

filespec — is the specification of a file of which you want a permanent copy

,... — means that, after commas, you can give more arguments of the form already shown

@@subcommand — means that after a final comma you can type an optional subcommand. The following subcommand is available:

RETAIN — which causes the disk copies of the files being archived to be retained in your directory, rather than deleted and expunged

Output

Whenever a file is taken off line as a result of your ARCHIVE command (i.e., when you do not also give the RETAIN subcommand), the operator sends a MAIL message notifying the owner òf the directory from which the file was taken. For this purpose, the owner of the directory is defined to be the user or users whose user names appear in a file of specification DIRECTORY.OWNER in the directory. If this file does not exist, the message is sent to MAIL.TXT in the directory. If neither file exists, no message is sent.

ARCHIVE (Cont.)

Characteristics

Archived Files Unalterable

You cannot change the contents of files specified in an ARCHIVE command once the command is given, even if the files are not immediately copied to tape. This means that you cannot alter or add to them by using the EDIT or APPEND command, or overwrite them by using the COPY or RENAME command. In general, files for which you have requested archival must not be given as the second filespec argument of these commands.

Archived Files Invisible

The files you specify in an ARCHIVE command ordinarily become invisible to most TOPS-20 commands as soon as the ARCHIVE command is given. However, if you include the RETAIN subcommand when giving the ARCHIVE command, the files remain visible. See Related Commands, below, for a list of commands you can use with invisible files.

Effect on Memory and Terminal

The ARCHIVE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

CANCEL ARCHIVE — for canceling archival requests

DELETE (with ARCHIVE subcommand) — for deleting archived files

(with CONTENTS-ONLY subcommand) — for deleting only the disk copy of files that also have a tape copy

DIRECTORY (with ARCHIVE subcommand) — for requesting information on archived files (visible and invisible) only

DIRECTORY (with INVISIBLE subcommand) — for requesting information on invisible files only

DISCARD	for giving up the tape copy of on-line files
INFORMATION ARCHIVE-STATUS	for determining if archival for the specified files (visible and invisible) has been accomplished
RETRIEVE	for restoring off-line files (visible and invisible) to on-line status
SET FILE INVISIBLE	for making visible files invisible
SET FILE VISIBLE	for making invisible files visible

Examples

1. Archive a file.

```
@ARCHIVE ARTEST.FIL
 ARTEST.FIL.1 [Requested]
@
```

2. Archive a file, but keep a copy on disk. Check the archive status of files.

```
@ARCHIVE ARCHEK.FIL,
@@RETAIN
@@
 ARCHEK.FIL.1 [Requested]
@INFORMATION ARCHIVE-STATUS
 ARCHEK.FIL.1 Archive requested,  Retain contents
 ARTEST.FIL.1 Archive requested
@
```

3. Attempt to edit an archived file (first you must make it visible). Note that, afterwards, the unedited backup copy is the archived file, and that the edited file has no archive status.

```
@INFORMATION ARCHIVE-STATUS ARTEST.FIL
 ARTEST.FIL.1 Archive requested
@EDIT ARTEST.FIL

%No such filename, Creating New file
Input: ARTEST.FIL.2
00100   $
*EQ
@SET FILE VISIBLE ARTEST.FIL
 ARTEST.FIL.1 [OK]
@EDIT ARTEST.FIL
Edit: ARTEST.FIL.1
*P
00100   !TEST FILE FOR ARCHIVING
*I200
00200   !FIRST MODIFICATION
00300   $
*P^:*
00100   !TEST FILE FOR ARCHIVING
00200   !FIRST MODIFICATION
*EU

[ARTEST.FIL.2]
@INFORMATION ARCHIVE-STATUS ARTEST.*
 ARTEST.QIL.1 Archive requested
@TYPE ARTEST.QIL
!TEST FILE FOR ARCHIVING
@TYPE ARTEST.FIL
!TEST FILE FOR ARCHIVING
!FIRST MODIFICATION
@DIRECTORY ARTEST.*

   MISC:<LATTA>
 ARTEST.FIL.2
   .QIL.1

 Total of 2 files
@
```

ASSIGN

Function

The ASSIGN command reserves a specific input-output device for your job.

Format

```
@ASSIGN (DEVICE) dev:
```

where

dev: is the name of the device you want to assign

Restrictions

Assigning Magnetic Tape Drives

You can use the ASSIGN command to assign tape drives only if they are of the form MTAn:. Tape device names of the form MTn: are logical device names only, and are assigned automatically at the time of MOUNT TAPE commands.

Effect on Memory and Terminal

The ASSIGN command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DEASSIGN	for surrendering a previously assigned device
MOUNT	for mounting a structure or magnetic tape set without assigning a specific drive
INFORMATION AVAILABLE DEVICES	for finding out which devices can be assigned or have been assigned to your job

ASSIGN (Cont.)

Examples

1. Assign a tape drive to your job.

```
@ASSIGN MTA0:
@
```

2. Find out which devices are available for timesharing use, then assign one to your job.

```
@INFORMATION AVAILABLE DEVICES
Devices available to this job:
 DSK, PS, SNARK, MISC, LANG, MTA1, LPT, LPT0, LPT1
 CDR, PCDR0, CDP, FE1-15, PTY20-61, NUL, PLT, PLT0
 DCN, SRV
Devices assigned to/opened by this job: TTY41
@ASSIGN PCDR0:
@
```

ATTACH

Function

The ATTACH command engages a job to your terminal.

Format

```
@ATTACH (USER) name (JOB #) number
PASSWORD:  password
```

where

name — is the user name of the job's owner

number — is the job number
    Default — the only job, or only detached job, or only job other than your current job, logged in under the user name you give

password — is the associated password (not requested if you are currently logged in under the same user name as the job that you are attaching)

Characteristics

Current Job Detached

If you give the ATTACH command while logged in, your current job is detached. You can use the LOGOUT n command to log out this detached job.

Hint

Using ATTACH to Restore Phoned-in Jobs

If you log in to the system by telephone lines and service is interrupted for any reason, use the ATTACH command to restore the connection. If you do not do this within five minutes, your job will be logged out automatically and you will have to log in again.

ATTACH (Cont.)

Warning

Attaching Attached Jobs

The system will ask you to confirm your choice with a carriage return before attaching to your terminal a job that is attached elsewhere. If you attach an attached job that is running a program, that program may be sent one or more CTRL/Cs, which can affect programs that handle CTRL/C themselves. To avoid this possibility you must give a DETACH command from the terminal to which the program's job is attached, then attach this job to your terminal with an ATTACH command.

Effect on Memory, Terminal, and Job

The ATTACH command affects neither memory nor the job that you are attaching (but see Warning, above), and leaves your terminal at TOPS-20 command level unless a program is being run by the job. If a program is being run, your terminal is left at command level, if any, in the job. Your terminal's characteristics will be those established in the job from which you gave the ATTACH command; if you were not logged in, they will be reset to system default characteristics.

Related Commands

SYSTAT	for finding out the user name and job number associated with any job
DETACH	for disengaging a job from your own terminal
UNATTACH	for disengaging a job from any other terminal

Examples

1. Attach your only job, which is presently detached.

```
@ATTACH LATTA
PASSWORD:_____
@
```

2. Attach one of several detached jobs.

```
@ATTACH LATTA
?JOB # REQUIRED - LATTA HAS MORE THAN ONE DETACHED JOB
@SYSTAT LATTA
  37    DET  EXEC    LATTA
  54    DET  NRRY    LATTA
@ATTACH LATTA 37
PASSWORD:_____
@
```

3. Check your jobs (your current job is marked with an asterisk (*)), then attach the only detached job. Verify the system's action.

```
@SYSTAT LATTA
  37    26   NEWRUN   LATTA
  58    DET  EXEC     LATTA
  59*   231  EXEC     LATTA
@ATTACH LATTA
 DETACHING JOB # 59
@INFORMATION JOB
 JOB 58, USER LATTA, ACCOUNT LANGUAGE, TTY231
@
```

4. Start a program in one job. Then detach and continue it, and attach another of your jobs.

```
@INFORMATION JOB
 JOB 9, USER LATTA, ACCOUNT LANGUAGE, TTY26
@RUN FFACTOR

^C
@DETACH CONTINUE
 DETACHING JOB # 9
^C
 SYSTEM 2102 DEVELOPMENT SYSTEM, TOPS-20 MONITOR 4(3212)
@SYSTAT LATTA
    9    DET  FFACTO  LATTA
   45     41  EXEC    LATTA
@ATTACH LATTA 45
 [ATTACHED TO TTY41, CONFIRM]
PASSWORD:____
@
```

BACKSPACE

Function

The BACKSPACE command moves a magnetic tape set backward over a specified number of files or records.

Format

```
@BACKSPACE (DEVICE) dev:  n units

where

dev:       is the name of the tape set or magnetic tape drive that
           you want to move backward

n          is the number of files or records over which  you  want
           to backspace
                Default n - 1

units      is either FILES or RECORDS
                Default units - FILES
```

Restrictions

BACKSPACE with Open Files

If you have given a CTRL/C to exit from a program that has opened a magnetic tape drive and you then give the BACKSPACE command for that tape drive, the system will first ask if you want to close the associated file. You must do so for BACKSPACE to succeed, but you will probably be unable to continue the program from that point because the file will now be closed.

RECORDS Argument Used for Unlabeled Tapes Only

You cannot give the RECORDS argument to the BACKSPACE command when using a labeled tape, because read and write operations for labeled tapes always move the tape to the beginning of a file first.

Effect on Memory and Terminal

The BACKSPACE command does not affect memory and leaves your terminal at TOPS-20 command level.

BACKSPACE (Cont.)

Related Commands

SKIP   for moving a magnetic tape set forward

REWIND   for backspacing a tape volume or tape set to its logical beginning (the beginning of the first file)

Examples

1. Backspace your magnetic tape one file.

```
@BACKSPACE MT0:  1 FILE
@
```

THIS PAGE INTENTIONALLY LEFT BLANK

BLANK

Function

The BLANK command clears your video terminal screen. It has no effect on a hard copy terminal.

Format

```
@BLANK (SCREEN)
@
```

Characteristics

This command moves the cursor to line 1 of the screen, providing you with a clean area for typing commands and receiving system output.

Effect on Memory and Terminal

The BLANK command does not affect memory and leaves your terminal at TOPS-20 command level.

BREAK

Function

The BREAK command ends communication links that have been formed between your terminal and those of other users.

Format

```
@BREAK (LINKS WITH) argument
@
```

where

argument — is a user name or line number. If you do not specify an argument, all communication links are broken.

Restrictions

Does Not End Advice

The BREAK command, given at either of two terminals joined by the ADVISE command, does not end advice but merely prevents the advisor's terminal from printing what either user types. Only a CTRL/E typed at the advisor's terminal ends advice.

Effect on Memory

The BREAK command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

TALK — for establishing communication links with another terminal

REFUSE LINKS — for preventing future communication links with your terminal

Examples

1. Use the BREAK command to end a TALK session with another user.

```
@BREAK
@
```

BREAK (Cont.)

2. Use the TALK command to speak to another user, then use BREAK to end the conversation.

```
@TALK PORADA
LINK FROM LATTA, TTY 41
@!HI. CAN YOU TELL ME WHERE THE PROJECT ESTIMATES ARE STORED?
@!SURE: THEY'RE ON TAPE LS2.0 IN THE LIBRARY.
@!THANKS. BYE
@BREAK
@
```

BUILD

Function

The BUILD command creates, modifies, or deletes a directory subordinate to a directory to which you have write access.

Format

```
@BUILD (DIRECTORY NAME) str:<directory>
@@subcommand
@@  .
    .
    .
@@
@
```

where

str: is the name of the (mounted) structure containing the directory you are building.

directory is the name of the directory you are building; it must be of 39 or fewer characters.

```
@@  .
    .
    .
@@
```

indicates that you automatically enter subcommand mode after completing the BUILD command line

subcommand is a keyword, chosen from the list below, indicating your choice of BUILD command options

Summary of BUILD Command Subcommands (defaults in boldface)

```
ABORT
ABSOLUTE-ARPANET-SOCKETS
ACCOUNT-DEFAULT account
ARCHIVE-ONLINE-EXPIRED-FILES
ARPANET-ACCESS
ARPANET-WIZARD
CONFIDENTIAL
DECNET-ACCESS
DEFAULT-FILE-PROTECTION octal protection code      Default code -
                                                           777700
DIRECTORY-GROUP group number n
DISABLE
ENABLE
ENQ-DEQ
FILES-ONLY
GENERATIONS n                                      Default n - 1
IPCF
KILL
```

```
        ( NAME-ONLY
LIST    { FAST
        ( VERBOSE
MAINTENANCE
MAXIMUM-SUBDIRECTORIES n                               Default n - 0
       ( ABSOLUTE-ARPANET-SOCKETS
       | ARCHIVE-ONLINE-EXPIRED-FILES
       | ARPANET-ACCESS
       | ARPANET-WIZARD
       | CONFIDENTIAL
       | DECNET-ACCESS
       | DIRECTORY-GROUP group number n
       | ENQ-DEQ
NOT    { FILES-ONLY
       | IPCF
       | KILL
       | MAINTENANCE
       | OPERATOR
       | REPEAT-LOGIN-MESSAGES
       | SUBDIRECTORY-USER-GROUP group number n
       | USER-GROUP group number n
       ( WHEEL

NUMBER octal directory number
OFFLINE-EXPIRATION-DEFAULT date or +n                  Default n - 90
ONLINE-EXPIRATION-DEFAULT date or +n                   Default n - 60
OPERATOR
PASSWORD 1- to 39-character word
PERMANENT n                                            Default n - 250
PROTECTION octal protection code                       Default code -
                                                               777700
PUSH
REPEAT-LOGIN-MESSAGES
SUBDIRECTORY-USER-GROUP group number n
USER-GROUP group number n

WHEEL
WORKING n                                              Default n - 250
```

BUILD Command Subcommands

ABORT

cancels all work done during current BUILD command. If directory was new, it does not exist; if old, it remains unchanged.

ABSOLUTE-ARPANET-SOCKETS

allows the directory owner to establish ARPANET network connections using 32-bit absolute socket numbers; users with Wheel or Operator capabilities can also perform this function. For use only with systems that are members of the ARPA network. See the <u>TOPS-20AN User's Guide</u> for more information.

BUILD Command Subcommands (Cont.)

ACCOUNT-DEFAULT account
causes the specified account to be charged for a terminal session whenever the user does not include an account in his LOGIN command.

ARCHIVE-ONLINE-EXPIRED-FILES
causes on-line files that have expired to be marked for archiving.

ARPANET-ACCESS
allows the directory owner to establish ARPANET network connections. This subcommand works in conjunction with pre-established system manager controls.

ARPANET-WIZARD
allows the directory owner to use special queues for sending and receiving information on the ARPANET network. For use only with systems that are members of the ARPA network. See the TOPS-20AN User's Guide for more information.

CONFIDENTIAL
grants the directory owner confidential information access capabilities, allowing him to obtain confidential information within the system via certain monitor calls. See the TOPS-20 Monitor Calls Reference Manual for details.

DECNET-ACCESS
allows the directory owner to establish DECNET network connections. This subcommand works in conjunction with pre-established system manager controls.

DEFAULT-FILE-PROTECTION octal protection code
assigns this number as default for the protection code of each file subsequently placed in the directory. The protection code is constructed (by addition) from the octal values shown below:

77	full access to the file
40	read the file
20	write and delete the file
10	execute the program contained in the file
04	append to the file
02	list the file specification using DIRECTORY-class commands
00	no access to the file

Default code - 777700

See the TOPS-20 User's Guide for more information about protection codes.

BUILD Command Subcommands (Cont.)

DIRECTORY-GROUP group number n

places the directory in a group, thereby allowing users in the same group access to it according to the middle two digits of the protection code, and access to files in the directory according to the middle two digits of each file's protection code. You can assign up to 19 directory goup numbers to each directory, with values ranging from 1 through 262143 (2**18 - 1). See the TOPS-20 System Manager's Guide for a discussion of groups.

DISABLE

suspends any special capabilities that you may have activated with the ENABLE subcommand or the ENABLE TOPS-20 command.

ENABLE

allows you to activate any privileged capabilities that the system manager has given you and that you may need during the BUILD session.

ENQ-DEQ

grants the directory owner the ability to perform global Enqueue and Dequeue functions; these are discussed in the TOPS-20 Monitor Calls Reference Manual.

FILES-ONLY

declares the directory to be a files-only directory, i.e., one not associated with a user. See Restrictions - Files-only Directories, below.

GENERATIONS n

specifies a default for the number of successive generations of files to be retained in the directory. This number must be from 0 to 15, with 0 meaning an infinite number.

Default n - 1

IPCF

allows the directory owner to execute all privileged IPCF functions; these are discussed in the TOPS-20 Monitor Calls Reference Manual.

KILL

eliminates the directory and any files it contains from the system; you must confirm this subcommand with an extra carriage return.

BUILD Commands Subcommands (Cont.)

LIST { NAME-ONLY | FAST | VERBOSE }

provides a listing at your terminal of parameter values set for the directory by TOPS-20 commands, BUILD subcommands, or by default. The FAST listing always includes the subdirectory's name, some mention of the password, working and permanent storage limits, and, if they have been set, directory number, account default, maximum number of subdirectories allowed to this directory, the date and time of last log-in, group memberships, and user group numbers assignable by this directory. The VERBOSE listing adds the other values that can be assigned by BUILD subcommands, while NAME-ONLY restricts output to the directory name.

Default - FAST

MAINTENANCE

allows the directory owner to execute certain system maintenance functions or monitor calls; discussed in the <u>TOPS-20 Monitor Calls Reference Manual</u>.

MAXIMUM-SUBDIRECTORIES n

allows the owner of this directory to build up to n subdirectories of his own, and subtracts an equal number from the value of this parameter for the superior directory

NOT
- ABSOLUTE-ARPANET-SOCKETS
- ARCHIVE-ONLINE-EXPIRED-FILES
- ARPANET-ACCESS
- ARPANET-WIZARD
- CONFIDENTIAL
- DECNET-ACCESS
- DIRECTORY-GROUP group number n
- ENQ-DEQ
- FILES-ONLY
- IPCF
- KILL
- MAINTENANCE
- OPERATOR
- REPEAT-LOGIN-MESSAGES
- SUBDIRECTORY-USER-GROUP group number n
- USER-GROUP group number n
- WHEEL

withdraws the specified subcommand

BUILD Command Subcommands (Cont.)

NUMBER octal directory number

assigns a specific directory number to a new directory (note: usually the default is adequate). Directory numbers 1 through 17 must never be assigned by users, as they are reserved for system use.

Default directory number - assigned by system

OFFLINE-EXPIRATION-DEFAULT date or +n

establishes the tape expiration date for files that are to go off line because of migration or archiving. If you specify "+n", the expiration date will be n days from the date the files are moved off line.

ONLINE-EXPIRATION-DEFAULT date or +n

establishes the disk expiration date for files that are to be created in the directory. If you specify "+n", the expiration date will be n days from the creation date.

OPERATOR

grants Operator capabilities to the owner of the directory; these are discussed further in the TOPS-20 Operator's Guide.

PASSWORD 1- to 39-character word

assigns a password, consisting of alphanumeric characters and possibly including hyphens (-), to the directory

PERMANENT n

allocates permanent disk storage capacity n (in pages) to the directory, and subtracts an equal number from the permanent disk storage capacity of the superior directory

Default n - 250

PROTECTION octal protection code

assigns the given directory protection code to the directory. The protection code is constructed (by addition) from the octal values shown below:

77 full access to the directory

40 access to files in the directory (including expunging individual files), consistent with the file protection of the files

BUILD Command Subcommands (Cont.)

10 connect to the directory without giving a password, undelete files, expunge the entire directory, and change times, dates, and accounting information for files. All other access is governed by the file protection of each file.
04 create files in the directory
00 no access to the directory
Default code - 777700

See the <u>TOPS-20 User's Guide</u> for more information about protection codes.

PUSH

creates a level of TOPS-20 inferior to the one from which you issued the BUILD command and leaves your terminal at this new level. You can then issue TOPS-20 commands to create conditions or obtain information that you may need during the BUILD session. Give the POP command to return to BUILD. See Example 6.

REPEAT-LOGIN-MESSAGES

causes all system messages (mail sent by privileged users to all users, contained in the file, PS:<SYSTEM>MAIL.TXT) to be printed on the user's terminal each time he logs in to this directory. If this subcommand is not given, only those system messages created since the last time he logged in are printed.

SUBDIRECTORY-USER-GROUP group number n

allows propagation of any or all of the group numbers in a directory's user group list to the subdirectories of that directory. Issuing this subcommand is the first step required in establishing subdirectory group rights. You complete the process by issuing the USER-GROUP subcommand for each subdirectory. You can assign up to 19 subdirectory user group numbers to each directory, with values ranging from 1 to 262143 (2**18 - 1).

USER-GROUP group number n

assigns the directory owner to the given user group. You can assign up to 19 subdirectory user group numbers to each directory, with values ranging from 1 to 262143 (2**18 - 1). See the <u>TOPS-20 System Manager's Guide</u> for a discussion of groups.

BUILD Command Subcommands (Cont.)

WHEEL	grants Wheel capabilities to the owner of the directory, allowing him to perform all the privileged functions available on the system; these are discussed further in the TOPS-20 Operator's Guide.
WORKING n	allocates working disk storage capacity n (in pages) to the directory, and subtracts an equal number from the working disk storage capacity of the superior directory. Ordinarily, working and permanent storage limits are equal. Default n - 250

Characteristics

BUILD and ^ECREATE

The BUILD command is identical in format to the privileged ^ECREATE command. If you use BUILD with Wheel or Operator capabilities enabled, it has the same power as ^ECREATE, namely, to create directories and modify the parameters of any directory on the system. Without these capabilities, you can use BUILD to modify a more restricted set of directories: you can modify a directory if you have write access to the immediately superior directory. The LOGIN, CONNECT, or ACCESS command obtains write access to the superior directory; or, if you have sufficient group rights to the superior directory, you can use BUILD to modify its subdirectories.

More Information

For a description of using ^ECREATE to create directories, see the TOPS-20 Operator's Command Language Reference Manual.

Quotas Subtracted from the Superior Directory's Allotments

Working and permanent disk storage page limits, and the maximum number of subdirectories allowed to a subdirectory are subtracted from the quotas allocated to the immediately superior directory. This subtraction occurs at the time of their allotment to a subdirectory. If the superior directory's quota is not sufficient, the BUILD command will fail. To increase the superior directory's quota of any of these quantities you must either kill some of its subdirectories or reduce their allotments of the quantity. Or you can ask the system manager to increase the allotment of the superior directory. Remember that unless you specify working and permanent page limits, they will assume a default value of 250 pages. The BUILD command will fail in this case if there are not at least 250 pages free in the immediately superior directory.

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Assigning Infinite Quotas

If you have Wheel or Operator capabilities enabled, you can assign the maximum storage limit of 34359738367 (i.e., 2**35-1) to a directory. This will appear in the response to an INFORMATION DIRECTORY command as +INF, denoting infinite storage capacity. If you then use the BUILD command to construct subdirectories to this directory, any disk storage capacity assigned, even the maximum, will not be subtracted from the superior directory. You can use this feature to assign infinite storage capacity to a number of users sharing a private structure. Then these users may use storage space on the structure without limit until the disk pack fills up.

Hints

Keeping Track of Subdirectories

Subdirectories appear as files of type .DIRECTORY in the immediately superior directory, so the DIRECTORY *.DIRECTORY command for the superior directory will indicate any existing subdirectories. To suppress the listing of these files you can use the SET FILE PROTECTION command to give them a protection of 000000, but then you must specify the files completely (including generation number) to access them in the future.

If there are two or more levels of subdirectories below a superior directory, you can do something else to allow a listing of them: put each subdirectory into a group of which the owner of the highest-level superior directory is a member. Then, if you obtain the group rights of this owner (e.g., by using the LOGIN or ACCESS command if the superior directory is on PS:, or ACCESS if it is on another structure), the INFORMATION DIRECTORY <directory.*> command with the NAME-ONLY subcommand will produce a listing of subdirectories at every level beneath the superior directory. For this feature to operate properly the group field of each subdirectory's protection code must be at least 40.

Modifying Subdirectories Easily

By following the above procedure, that is, by making subdirectories at every level members of groups of which the owner of the highest-level superior directory is also a member, you make the modification of these subdirectories much easier. You can use the BUILD command to modify these subdirectories or read and write to them, as long as you have the group memberships of this owner. You need not connect to each subdirectory's immediate superior to make modifications.

Restrictions

Giving Capabilities to Subdirectory Owners

In order to give capabilities (Wheel, Operator, Absolute-Arpanet-Sockets, Arpanet-Wizard, Confidential, Enq-Deq, IPCF, or Maintenance) to a subdirectory owner, you must have these capabilities yourself, and they must be enabled at the time of the BUILD command. Wheel and Operator capabilities allow you to assign any capabilities. The INFORMATION DIRECTORY command for your log-in directory tells you which capabilities you have, if any.

Modifying Other Directories

Unless you have Wheel or Operator capabilities enabled, you can use the BUILD command to modify the parameters of only those directories subordinate to a directory to which you have write access. (See Characteristics - BUILD and ^ECREATE, and Hints - Modifying Subdirectories Easily, above.) If your installation allows it, you can use the SET DIRECTORY command to change some parameters of these directories.

Files-only Directories

By giving the FILES-ONLY subcommand you make the directory a files-only directory (see Figure 1). A files-only directory is not associated with a user and so should not be given capabilities or user group memberships. Although a files-only directory can have subdirectories, none of these can be a user directory. You cannot give the ACCESS or LOGIN command for a files-only directory.

Killing Directories

You cannot kill a directory that has subdirectories; first you must kill those subdirectories one by one. (When you kill a directory, the files it contains are deleted and expunged.) Also, you cannot kill a directory if you are logged into it or connected to it, or there are open files on it.

Effect on Memory and Terminal

The BUILD command does not affect memory and leaves your terminal at BUILD subcommand level.

Related Commands

INFORMATION DIRECTORY — for examining the parameters established for a directory

INFORMATION DISK-USAGE — for determining how much of a directory's disk space is already assigned to files

SET DIRECTORY — for changing certain directory parameters

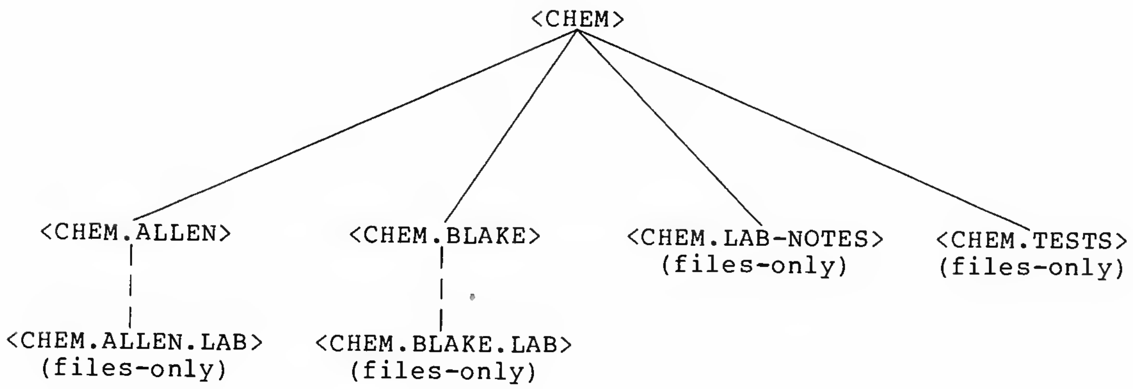

Figure 1 Directories and Subdirectories

BUILD (Cont.)

Examples

The examples show how a user with a directory named <CHEM> builds subdirectories in the pattern shown in Figure 1.

1. Build directories for two of your students or employees, assigning disk space and passwords and placing them in one of your directory groups; check their parameters.

```
@BUILD <CHEM.ALLEN>
[NEW]
@@WORKING 50
@@PERMANENT 50
@@PASSWORD 619JIM
@@DIRECTORY-GROUP 2391
@@LIST
 NAME <CHEM.ALLEN>
 Password 619JIM
 Working disk storage page limit 50
 Permanent disk storage page limit 50
 Account default for LOGIN - none set
 Directory groups 2391

@@
@BUILD <CHEM.BLAKE>
[New]
@@WORKING 50
@@PERMANENT 50
@@PASSWORD 127BIL
@@DIRECTORY-GROUP 2391
@@LIST
 Name <CHEM.BLAKE>
 Password 127BIL
 Working disk storage page limit 50
 Permanent disk storage page limit 50
 Account default for LOGIN - none set
 Directory groups 2391

@@
@
```

2. Modify Blake's directory to allow him to create 2 subdirectories.

```
@BUILD <CHEM.BLAKE>
[Old]
@@MAXIMUM-SUBDIRECTORIES 2
@@
@
```

3. Build a files-only directory to store examination questions.

```
@BUILD <CHEM.TESTS>
[New]
@@FILES-ONLY
@@WORKING 10
@@PERMANENT 10
@@PASSWORD MINERVA
@@DIRECTORY-GROUP 2391
@
```

4. Build a files-only directory as a library directory for your subdirectory owners. Place the directory and these users in the same group.

```
@BUILD <CHEM.LAB-NOTES>
[New]
@@FILES-ONLY
@@WORKING 25
@@PERMANENT 25
@@PROTECTION 774000
@@DEFAULT-FILE-PROTECTION 775200
@@DIRECTORY-GROUP 2392
@@
@BUILD <CHEM.ALLEN>
[Old]
@@USER-GROUP 2392
@@
@BUILD <CHEM.BLAKE>
[Old]
@@USER-GROUP 2392
@@
@
```

5. User Blake quits. Delete his directory.

```
@BUILD <CHEM.BLAKE>
[Old]
@@KILL
[Confirm]
@@
@
```

6. Modify a subdirectory so that the subdirectory's owner will have 350 disk pages available.

```
@BUILD (DIRECTORY NAME) <TUCKER.TEST> (PASSWORD) EXAMPLES
[Old]
@@PERMANENT (DISK STORAGE PAGE LIMIT) 350
@@
?Request exceeds superior directory permanent quota.
Please fix incorrect subcommands.
```

The action above produced an error message. To correct the error, PUSH out of the BUILD session to learn what the superior directory's permanent quota is.

```
@@PUSH

 TOPS-20 Command processor 5(702)
@INFORMATION (ABOUT) DISK-USAGE (OF DIRECTORY) <TUCKER>
 PS:<TUCKER>
 70 Pages assigned
 261 Working pages, 261 Permanent pages allowed
 7546 Pages free on PS:, 144454 pages used.
```

Then return to the BUILD session, and specify a permanent quota that is less than the superior directory's quota of 261 disk pages.

```
@POP
[Continuing BUILD of directory PS:<TUCKER.TEST>]
@@PERMANENT (DISK STORAGE PAGE LIMIT) 170
@@
@
```

CANCEL

Function

The CANCEL command withdraws requests made with a previous queue-class command.

Format

@CANCEL (REQUEST TYPE) queue (ID) identifier/switch(es)

where

queue — is the name of the queue, chosen from the following list:

ARCHIVE — for requests made using the ARCHIVE command

BATCH — for requests made using the SUBMIT command

CARDS — for requests made using the PUNCH CARDS command

MOUNT — for requests made using the MOUNT STRUCTURE or MOUNT TAPE command

PAPER-TAPE — for requests made using the PUNCH PAPER-TAPE command

PLOT — for requests made using the PLOT command

PRINT — for requests made using the PRINT command

RETRIEVE — for requests made using the RETRIEVE command

identifier — is one of the following:

request ID number

the unique identifier assigned by the system to your request. This is the number appearing under the heading "Req#" in the list of requests shown by the appropriate INFORMATION command (see Related Commands, below). To cancel archival requests, use "filespec" argument instead.

jobname — the jobname of the request, either the first six characters of the first filename in the request or the argument you supplied to a /JOBNAME switch when making the request (for output and batch requests), or the first six characters of each filename in the request (for retrieval requests), or the first six characters of the structure alias or tape set name (for mount requests). This is the name appearing under the heading "Name", "Req Name", or "Job Name" in the list of requests shown by the appropriate INFORMATION command (see Related Commands, below).

filespec — the specification of a file. Use this argument to cancel archival requests.

Use an asterisk (*) as identifier to cancel all your requests in the specified queue.

/switch — is one or more of the following switches:

/JOBNAME:jobname — which gives the jobname of the request you want to cancel. See Special Cases - /JOBNAME Switch, below.

/SEQUENCE:n — which gives the sequence number of the batch or output request you want to cancel. The INFORMATION BATCH-REQUESTS or INFORMATION OUTPUT-REQUESTS command with the /ALL switch gives the sequence number assigned to these requests. Use this switch in CANCEL commands placed within batch jobs: then you can cancel requests made earlier in the batch job even though you do not know the request ID number.

/USER:user name

which cancels the specified request entered under the given user name. Use an asterisk (*) both for request ID number and as argument to this switch to cancel all requests of all users in the specified queue. For privileged users only.

Output

When you complete a CANCEL command removing a request, the system responds with "[1 Job Canceled]" and makes the appropriate deletion from the indicated queue. If the job is being processed, the response is "[1 Job Canceled (1 was in progress)]", but if the job is already finished, it is simply "[No Jobs Killed]".

Characteristics

Request ID or Jobname as Argument to CANCEL

You can cancel a single queue request (those made with Queue-class commands - MOUNT, PLOT, PRINT, PUNCH, RETRIEVE, or SUBMIT) by giving either its request ID number or its jobname as the second argument of a CANCEL command. This argument is interpreted as a request ID number unless it includes one or more non-numeric characters. If the argument includes non-numeric characters it is interpreted as a jobname. By giving a jobname as the second argument of a CANCEL command, you cancel all your requests of that jobname in the specified queue. But see also Special Cases - /JOBNAME Switch, below.

Special Cases

/SPOOLED-OUTPUT Switch

You can give the special switch, /SPOOLED-OUTPUT, after the CARDS, PAPER-TAPE, PLOT, or PRINT argument to the CANCEL command. By doing so you cause any accumulated requests in the spooler queue for the appropriate output device (CDP:, PTP:, PLT:, or LPT:, respectively) to be canceled, rather than filled when you log out. Do not give any further arguments to a "CANCEL queue /SPOOLED-OUTPUT" command.

/JOBNAME Switch

In the singular case when you want to cancel several queue requests of the same jobname using a single command, and that jobname is purely numerical (for example, 5045), you must use the /JOBNAME:jobname switch as the second argument to the CANCEL command. Do not also give the request ID or jobname as a command argument if you give the /JOBNAME:jobname switch.

Restrictions

Cannot Cancel Filled Tape-mount Requests

You cannot use the CANCEL command to withdraw a MOUNT TAPE request once the first volume of tape has been mounted (i.e., once you have received a message of the form, [setname defined as MTn:]). Use the DISMOUNT command to give up your tape resource in this case. Note that the DEASSIGN or LOGOUT command will also dismount the tape set.

Cannot Cancel Certain Archival Requests

You cannot use the CANCEL command to withdraw an archival request once the operator has initiated archival procedures. Thus, even though files remain on disk between the operator's first and second archive runs, you cannot cancel a request during this time. If you try to cancel a request after archiving has begun, you receive the error message:

```
?File has archive status: filename
```

Note that this error does not terminate a multifile CANCEL ARCHIVE command (for example, CANCEL ARCHIVE *.*); the TOPS-20 command processor continues processing each remaining filename in the request. Cancel requests for these remaining files are judged individually.

Effect on Memory and Terminal

The CANCEL command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

ARCHIVE	for requesting archival of a file
INFORMATION ARCHIVE-STATUS	for finding out the archival status of files

CANCEL (Cont.)

INFORMATION BATCH-REQUESTS	for examining requests in the batch input queue
INFORMATION MOUNT-REQUESTS	for examining requests in the structure- and tape-mount queue
INFORMATION OUTPUT-REQUESTS	for examining requests in the line printer, plotter, card punch, and paper tape punch queues
INFORMATION RETRIEVAL-REQUESTS	for examining requests in the retrieval queue
MODIFY	for changing requests without removing them
MOUNT	for placing requests in the structure- or tape-mount queue
PLOT	for placing requests in a plotter queue
PRINT	for placing requests in a line printer queue
PUNCH	for placing requests in the card- or paper-tape-punch queue
RETRIEVE	for placing requests in the retrieval queue
SUBMIT	for placing requests in the batch input queue

Examples

1. Cancel a specific print request.

```
@CANCEL PRINT REMAX
[1 JOB CANCELED]
@
```

2. Cancel all your batch requests.

```
@CANCEL BATCH *
[3 JOBS CANCELED]
@
```

3. Find out what line printer requests you have made, then cancel one of two jobs bearing the same jobname.

```
@INFORMATION OUTPUT-REQUESTS /USER

Printer Queue:
Job Name      Req#    Limit    User
--------      ----    -----    -------
  MYCOPY       142       81    LATTA   /Lower /After: 8-Nov-79 18:00
  MYCOPY       143       81    LATTA   /After: 8-Nov-79 18:00
  MYCOPY       144       81    LATTA   /After: 8-Nov-79 18:00
  HOLMAX       141      200    LATTA   /After: 8-Nov-79 17:00
  HOLMAX       140      200    LATTA   /After: 8-Nov-79 18:00
There are 5 Jobs in the Queue (None in Progress)

@CANCEL PRINT  141
[1 Job Canceled]
@
```

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4. Get a list of your printing jobs (and some of the switches you gave), then cancel three of them.

```
@INFORMATION OUTPUT-REQUESTS /ALL/USER

Printer Queue:
Job Name    Req#   Limit    User
---------   ----   -----    -------
  MYCOPY     142       81   LATTA  /Lower /After: 8-Nov-79 18:00
            /Prio:20            /Seq:1728
  MYCOPY     143       81   LATTA  /After: 8-Nov-79 18:00
            /Seq:1729
  MYCOPY     144       81   LATTA  /After: 8-Nov-79 18:00
            /Seq:1730
  HOLMAX     140      200   LATTA  /After: 8-Nov-79 18:00
            /Seq:1726
There are 4 Jobs in the Queue (None in Progress)

@CANCEL PRINT MYCOPY
[3 Jobs Canceled]
@
```

5. Cancel a plotter request.

```
@CANCEL PLOT 94
[1 Job Canceled]
@
```

6. Cancel a mount request for a structure or a tape set.

```
@CANCEL MOUNT 24
[1 mount request canceled]
@
```

7. Find out what requests are in the mount queue. Cancel your structure mount request.

```
@INFORMATION MOUNT-REQUESTS

Tape/Disk Mount Queue:
Volume     Status   Type   Write    Req Name  Req#   Job#   User
-------   -------   ----  -------   --------  ----   ----   ----------
MARK      MTA1      Tape  Enabled   MARK       126     60   HOVSEPIAN
TAPE      MTA3      Tape  Enabled   TAPE       148     13   WALLACE
LATB      Waiting   Disk            LATB       157     65   LATTA
There are 3 Requests in the Queue

@CANCEL MOUNT 157
[1 mount request canceled]
@
```

CANCEL (Cont.)

8. Find out what requests are in the mount queue. Cancel a mount request that has not yet been filled, and dismount a tape that has been mounted.

```
@INFORMATION MOUNT-REQUESTS

Tape/Disk Mount Queue:
Volume    Status   Type   Write    Req Name  Req#  Job#  User
-------  -------  ----  -------  --------  ----  ----  ----------
MARK      MTA1     Tape  Enabled  MARK        29    15  HOVSEPIAN
DBL02     MTA0     Tape  Enabled  LAT         31    24  LATTA
NCV19     Waiting  Tape  Enabled  NCV         32    24  LATTA
There are 3 Requests in the Queue

@CANCEL MOUNT 32
[1 mount request canceled]
@DISMOUNT TAPE LAT:
[Tape dismounted, logical name LAT: deleted]
@
```

CLOSE

Function

The CLOSE command closes files in your job and releases their JFNs.

Format

```
@CLOSE (JFN) n

where

n          is the JFN (Job File Number) of a file
                     Default n - all JFNs for open and closed files
```

Output

When the CLOSE command is completed, the system prints a message on your terminal for each JFN that it has closed or attempted to close.

Characteristics

CLOSE Usually Unnecessary

The CLOSE command is used to preserve the contents of a file after the abnormal termination of the program that opened it. Under ordinary conditions you do not need to use the CLOSE command.

Special Cases

CLOSE For Closed Files

If you give the CLOSE command for an existing but closed JFN, the JFN is released.

Restrictions

Closing Mapped Files

You cannot close files that are mapped into memory; in this case you may give the RESET command, which clears memory. (Note, however, that RESET will delete and expunge a mapped file if the file is new, rather than save it as CLOSE would. To save a new mapped file, give the SET PAGE-ACCESS 0:777 NONEXISTENT command, and follow this with CLOSE.) If RESET by itself does not close the file, you may first have to give the POP command to return to a higher level of the TOPS-20 command processor; then give the RESET command.

CLOSE (Cont.)

Once memory has been cleared, all files are closed for processes at the current and lower levels of TOPS-20.

Effect on Memory and Terminal

The CLOSE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION FILE-STATUS — for determining which files are open in your job

INFORMATION MEMORY-USAGE — for determining which files are mapped

RESET — for closing mapped files and clearing memory

Examples

1. Close an open file.

```
@CLOSE 4
 4    EDIT-BUFFER.OUT.100036    [OK]
@
```

2. Try to close all your open files. Give the RESET command to close those that are mapped. (Note that the file EXEC.EXE, containing the TOPS-20 command processor, cannot be closed.)

```
@CLOSE
 3    TEST1.CBL.1    [OK]
 2    PS:<LOADTEST>EDIT.EXE.4    Can't close file - File
still mapped
 1    PS:<SYSTEM>EXEC.EXE.153    Can't close file - File
still mapped
@RESET
@CLOSE
 1    PS:<SYSTEM>EXEC.EXE.153    Can't close file - File
still mapped
@
```

COMPILE

Function

The COMPILE command translates source files into object (relocatable binary) files.

Format

```
@COMPILE (FROM) /switch(es) source/switch(es) object,...
```

where

switches — are keywords chosen from the list below, indicating your choice of COMPILE command options. They have different effects depending on their position in the command line: placed before all files in the command, they act as defaults for all; otherwise, they affect only the nearest preceding file.
Defaults are shown in the list of switches

source — is the file specification of a source program. The filename must be of 6 or fewer characters, and the file type of 3 or fewer characters; you cannot use a generation number.
Default - arguments you gave in your last LOAD-class command

object — is the filename you choose for the object file; it must be of 6 or fewer characters.
Default - filename of the source file (file type is .REL)

,... — means that, after commas, you can give more arguments of the form already shown

Summary of COMPILE Command Switches (defaults in boldface)

/68-COBOL
/74-COBOL
/ALGOL
/BINARY
/COBOL
/COMPILE
/CREF
/DEBUG
/FORTRAN
/LANGUAGE-SWITCHES:"/switch(es)"
/LIST
/MACRO
/NOBINARY
/NOCOMPILE
/NODEBUG
/NOLIST
/NOOPTIMIZE
/OPTIMIZE
/STAY

COMPILE (Cont.)

Descriptions of these switches are given below. Although the system will not reject switches described under any of the LOAD-class commands, only those switches commonly associated with COMPILE are described here.

COMPILE Command Switches

/68-COBOL — compiles the file using the COBOL-68 compiler
Default for files of type .CBL

/74-COBOL — compiles the file using the COBOL-74 compiler

/ALGOL — compiles the file using the ALGOL compiler

/BINARY — allows generation of an object (binary) file for each source file given. Use this switch to cancel a /NOBINARY switch.
Default

/COBOL — compiles the file using the COBOL-68 compiler

/COMPILE — forces compilation of the source file even if a current object file already exists. Use this switch along with the /LIST or /CREF switch to obtain listings when you have current object files. (See also the /NOBINARY switch.)

/CREF — creates a file containing cross-reference information for each compilation. The filename is that of the object file; the file type is .CRF. Use the CREF command to obtain a listing of the file. (For COBOL files, this switch automatically produces a cross-reference listing.) See the TOPS-20 User Utilities Guide for information about the CREF program.

/DEBUG — produces an object file containing debugging information beyond what is usually inserted during a compilation. (For FORTRAN programs only, and only if you have not given the /OPTIMIZE switch.)

/FORTRAN — compiles the file using the FORTRAN compiler
Default for switches specifying compiler language, in the absence of a standard source file type

/LANGUAGE-SWITCHES:"/switch(es)"
passes the specified switches to the compiler that will process the file(s) to which this switch applies. You must include the switches in double quotation marks (" ").

/LIST — prints a listing of the program in ASCII format; the name of this listing is the filename of the object file. The /CREF switch overrides /LIST when they both apply to the same file.

COMPILE Command Switches

/MACRO — assembles the file using the MACRO assembler

/NOBINARY — prevents generation of an object (binary) file. Use this switch along with /LIST or /CREF to allow these switches to take effect without producing a new object file.

/NOCOMPILE — prevents compilation if the associated object file is current; otherwise it forces compilation. Use this switch to cancel a /COMPILE or /RELOCATABLE (see the EXECUTE command description) switch. See Characteristics - Compiling New Sources Only, below.
Default

/NODEBUG — excludes special debugging information from your object file. (For FORTRAN programs only.)
Default

/NOLIST — prevents a line printer listing of the program
Default

/NOOPTIMIZE — prevents the generation of a globally optimized object file. (For FORTRAN programs only.)
Default

/OPTIMIZE — calls for generation of a globally optimized object file, that is, one that runs as quickly as possible. (For FORTRAN programs only, and only if you have not given the /DEBUG switch.)

/STAY — returns your terminal to TOPS-20 command level so that you can perform other work while the system continues to compile your program. You immediately receive the TOPS-20 prompt (@ or $), and can then issue any user command. But be careful with commands that run programs, because those commands may clear memory and terminate the current process. Also, you could easily send incorrect data to programs expecting terminal input. This switch saves you from having to: issue a ^T to make sure the compiler has begun; give a ^C to halt compilation; and issue a CONTINUE STAY command to remain at command level during compilation.

Characteristics

Compiling New Sources Only

The system usually compiles only those sources for which there are no current object files, that is, sources whose write dates are more recent than those of the object files of the same name.

COMPILE Command Switches

However, sources for which you supply a new object filename are compiled even if there are current object files. You can always force compilation with the /COMPILE switch.

Using Standard File Types

If you specify source files with standard types (.FOR, .MAC, .CBL, or .ALG) in a COMPILE command, the system automatically calls the appropriate compiler when compilation is necessary. If you specify source files by filename only, the system searches your connected directory in the above order for a file of this name and a standard type. To compile programs from sources that have nonstandard file types, give a switch to indicate the proper compiler (/FORTRAN, /MACRO, /COBOL, or /ALGOL). A switch will take precedence over a standard file type if they indicate different languages. If no compiler is indicated with either a switch or a standard file type, the FORTRAN compiler is used.

Hints

Plus Signs Between Filespecs

If you give two or more filespecs separated by plus signs (+) as arguments to COMPILE, they are compiled together as if they were a single file. Their object module is stored under any filename given as the "object" argument of the command, or (if none) under the last filename in the group and file type .REL.

Indirect Files as Arguments

You can store the arguments (source and object filespecs, switches) of a COMPILE command in an indirect file, and specify them by typing an at sign (@) and its filespec as a COMPILE command argument.

Establishing Default Arguments with the SET Command

You can issue the SET DEFAULT COMPILE-SWITCHES command to set up default global arguments to the COMPILE command. Insert this SET command in your COMAND.CMD file to change your own defaults permanently.

Restrictions

Switches Assuming Compilation

```
/CREF
/DEBUG
/LANGUAGE-SWITCHES
/LIST
/NODEBUG
/NOLIST
/NOOPTIMIZE
/OPTIMIZE
```

The above switches will not take effect unless the COMPILE command causes a new compilation of the relevant source file. See Characteristics - Compiling New Sources Only, above, for more information.

Effect on Memory and Terminal

The COMPILE command clears memory and loads the appropriate compiler. After the compilation your terminal is left at TOPS-20 command level.

Related Commands

LOAD, EXECUTE, and DEBUG	other LOAD-class commands for performing related functions

Examples

1. Compile a FORTRAN program.

```
@COMPILE RSD2.FOR
FORTRAN: RSD2
MAIN.
@
```

2. Do the same thing, using a switch to indicate the proper compiler. Use the /STAY switch to return immediately to TOPS-20 command level.

```
@COMPILE RSD2/FORTRAN/STAY
@PUSH
@EDIT LOGIN.CMD
```

3. Create an indirect file. Use it to compile several programs, forcing a compilation of the last one and storing its object file under a new name.

COMPILE (Cont.)

```
@CREATE UPDATE.CMD
Input: UPDATE.CMD.1
00100   /CDBDL FSTQ, SNDQ, THDQ, FTHQ/COMPILE ANNUAL
00200   $
*E

[UPDATE.CMD.1]
@COMPILE @UPDATE.CMD
CDBDL:   DMN     [FSTQ.CBL]
COBOL:   DMN     [SNDQ.CBL]
CDBDL:   DMN     [THDQ.CBL]
CDBDL:   DMN     [FTHQ.CBL]

EXIT
@DIRECTORY,
@@CHRDNDLOGICAL WRITE
@@REVERSE
@@
   PS:<LATTA>
  ANNUAL.REL.1
  THDQ.REL.1
  SNDQ.REL.1
  FSTQ.REL.1
  UPDATE.CMD.1
  017CRE.TMP.100017;T
  FTHQ.CBL
  THDQ.CBL
  SNDQ.CBL
  FSTQ.CBL

  Total of 10 files
@
```

4. Produce a cross-reference (.CRF) file for a FORTRAN program although you already have a current object file; prevent the generation of a new object program. Check for the output file.

```
@COMPILE /CREF/FORTRAN/CDMPILE/NDBINARY RSD2
FORTRAN: RSD2
MAIN.
@DIRECTDRY,
@@CHRDNDLDGICAL WRITE
@@REVERSE
@@

   PS:<LATTA>
 RSD2.CRF.1
 017CRE.TMP.100017;T
 RSD2.REL.1
 RSD2.FDR

 Total of 4 files
@
```

CONNECT

Function

The CONNECT command obtains ownership rights to a directory and makes it your connected directory.

Format

```
@CONNECT (TO DIRECTORY) dev:<directory>
PASSWORD:  password
@
```

where

dev:<directory> is the directory to which you want to connect

Default dev: - your connected structure

Default <directory> - the directory (on the specified structure) of the same name as your connected directory

Default (if no arguments are given) your log-in directory on PS:

password is the password of the directory (not requested for your log-in directory or a directory to which you already have ownership or sufficient group rights)

Characteristics

Capabilities

Your capabilities (Wheel, Operator, Confidential, etc.) are associated with your log-in user name only. If you connect to a directory whose owner has Wheel capabilities, you do not gain these capabilities.

Hints

Obtaining Group Rights

You can obtain group rights equal to those of the owner of a directory by giving the ACCESS command instead of, or in addition to, CONNECT for that directory.

Restrictions

Features Not Affected

For some system features, CONNECT does not affect the directory used:

CONNECT (Cont.)

Mail

The MAIL program inserts messages addressed to you into a file in your log-in directory only. The RDMAIL program reads messages from this file only, unless you are a privileged user.

System Accounting

The SET ACCOUNT command allows arguments valid for your log-in user name only. Generally, charges for system use are made to your log-in user name.

Queue-class Commands

The Queue-class commands charge processing requests to your log-in user name only.

Effect on Memory and Terminal

The CONNECT command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

ACCESS	for obtaining group as well as ownership rights equal to those of the owner of a directory
MOUNT	for making a structure available for connecting and ensuring the continued availability of the structure

Examples

1. Connect to another user's directory.

```
@CONNECT <HOLLAND>
Password:_____
@
```

2. Try to access a directory. Discovering that it is a files-only directory, connect to it instead.

```
@ACCESS <MANUALS>
?Directory is "files-only" and cannot be accessed
@CONNECT <MANUALS>
Password:_____
@
```

3. Connect to another user's directory on a different file structure and then to your directory on that structure; then return to your log-in directory on PS:. Give INFORMATION JOB-STATUS commands as you go along to check which is your connected directory.

```
@INFORMATION JOB
 Job 36, User LATTA, Account 341, TTY207
@MOUNT STRUCTURE SNARK:
Structure SNARK: mounted
@CONNECT SNARK:<HOLLAND>
Password:_____
@INFORMATION JOB
 Job 36, User LATTA, SNARK:<HOLLAND>, Account 341, TTY207
@CONNECT <LATTA>
@INFORMATION JOB
 Job 36, User LATTA, SNARK:<LATTA>, Account 341, TTY207
@CONNECT
@INFORMATION JOB
 Job 36, User LATTA, Account 341, TTY207
@DISMOUNT STRUCTURE SNARK:
Structure SNARK: dismounted
@
```

4. Connect to your directory on another structure and obtain your full rights to it. After giving an INFORMATION JOB-STATUS command to verify your connected directory, give a command that depends on these rights. Then return to your log-in directory on PS:.

```
@MOUNT STRUCTURE SNARK:
Structure SNARK: mounted
@ACCESS SNARK:
@CONNECT SNARK:
@INFORMATION JOB
 Job 36, User LATTA, SNARK:<LATTA>, Account 341, TTY207
@INFORMATION DIRECTORY <LATTA.*>,
@@NAME-ONLY
@@
 Name SNARK:<LATTA.ALLEN>
 Name SNARK:<LATTA.BLAKE>
 Name SNARK:<LATTA.LAB-NOTES>
 Name SNARK:<LATTA.TESTS>
@END-ACCESS SNARK:<LATTA>
@CONNECT
@DISMOUNT STRUCTURE SNARK:
Structure SNARK: dismounted
@
```

CONTINUE

Function

The CONTINUE command resumes execution of a program that is halted.

Format

```
@CONTINUE (PROGRAM) argument

where

argument        is one of the following keywords:

                      NORMALLY - which directs your program to resume
                                 executing and restores your terminal
                                 to command level (if any) within the
                                 program

                          STAY - which directs your program to resume
                                 executing but keeps your terminal at
                                 TOPS-20 command level
                                      Default - NORMALLY
```

Hints

Stopping Your Program or Providing Input After CONTINUE STAY

If you have given the CONTINUE STAY command and you then wish to stop your continued program or send terminal input to it, you must first give a CONTINUE NORMALLY command, to restore your terminal to program command level. Then you can give CTRL/Cs to stop the program, or type the input that is required.

Monitoring your Program

CONTINUE STAY, by keeping your terminal at TOPS-20 command level, lets you use TOPS-20 commands to monitor the progress of your program (see Related Commands, below) while it is running. You can also do other work as long as the commands you use do not affect memory. See Appendix B for a list of these.

Using PUSH to Get a New TOPS-20 Command Level

To use commands that call a program or otherwise affect memory, or to start a second program while the first one is running, give a PUSH command immediately after CONTINUE STAY. You receive a fresh copy of memory (address space) and can then give commands that affect memory or call programs. These commands do not affect the program that is already running. But see Restrictions, below.

Restrictions

Similar Programs Competing for Files

If you have two similar programs running at once after using CONTINUE STAY and PUSH commands (see Hints, above), they may try to access the same files at the same time (e.g., temporary files labeled by job number, used by compilers).

This may cause unpredictable situations to develop. To avoid the possibility, run different kinds of program or give different kinds of command (e.g., a LOAD-class command and an EDIT-class command) at the different levels in your job.

Programs Competing for Terminal Input

If you have two programs running at once after CONTINUE STAY (see Hints - Using PUSH to Get a New TOPS-20 Command Level, above), it is possible for the program running at the higher (first) TOPS-20 command level to intercept TOPS-20 commands given at the lower level. These can be interpreted as commands or data directed at the higher-level program. If you suspect that this is happening, you can stop it by first typing CTRL/Cs to be sure you are at the lower TOPS-20 command level. Then give POP commands to return to the higher TOPS-20 level. You may have to type more than one POP command because terminal input is being divided arbitrarily between the two levels. POP stops the lower-level program and erases its copy of memory. Finally, give CTRL/Cs followed by a CONTINUE NORMALLY command; this puts you at program command level in the higher-level program so you can give the commands or data it requires.

Commands That Affect Context of Job

Certain commands, by altering the context of your job, can affect programs you are running without changing memory. ACCESS, CONNECT, and DEFINE are examples. Give these commands with caution after CONTINUE STAY, even if you have given a PUSH command.

Effect on Memory and Terminal

The CONTINUE NORMALLY command does not affect memory, resumes processing the program in memory, and leaves your terminal at program command level (if there is one). The CONTINUE STAY command also does not affect memory and resumes processing the program in memory, but leaves your terminal at TOPS-20 command level.

CONTINUE (Cont.)

Related Commands

DETACH CONTINUE

for disengaging your current job from your terminal and continuing the program that the job is running

INFORMATION FILE-STATUS

for monitoring files being written by your program

INFORMATION MEMORY-USAGE

for monitoring your program's use of memory

INFORMATION PROGRAM-STATUS

for monitoring your program's use of CPU time

PUSH

for obtaining a lower TOPS-20 command level (and a fresh copy of memory)

REENTER

for starting your current program at its alternate entry point (if any)

START

for starting your current program at the beginning

Examples

1. Continue a program that you have halted.

```
@CONTINUE
```

2. Run a program, then halt it by typing CTRL/Cs. Give the CONTINUE command and proceed.

```
@RUN QUOTNT

type two numbers:   312.^C
@CONTINUE
45, 6.675

the quotient of    312.450    over    6.675 is    46.809
STOP

END OF EXECUTION
CPU TIME: 0.14 ELAPSED TIME: 35.62
EXIT
@
```

3. Start editing a file. Type a CTRL/C (and then give the M (monitor) command to the EDIT system program) to return to TOPS-20 command level. Give the DIRECTORY command to check the name of a file, then give the CONTINUE command to return to your editing job. (Note that you must press the RETURN key twice after giving CONTINUE to see the EDIT program's prompt (*).)

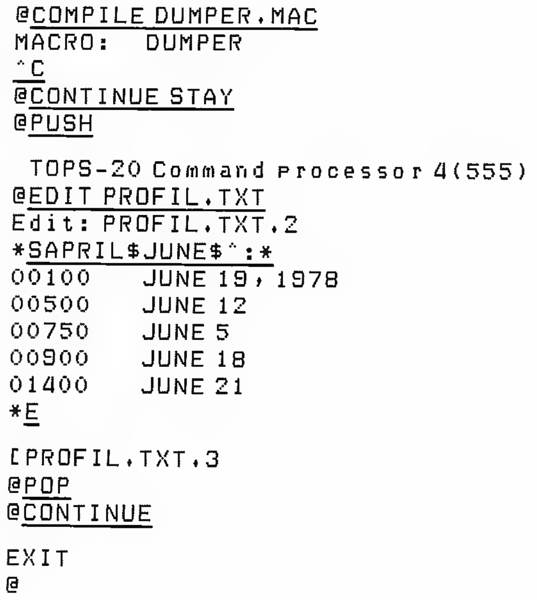
```
@EDIT REL3A.MEM
Edit: REL3A.MEM.9
*Yes? (Type H for help): M
@DIRECTORY *.TXT

   PS:<LATTA>
 MAIL.TXT.1
 MENTON.TXT.1
 PROFIL.TXT.1
 R20PRJ.TXT.1

 Total of 4 files
@CONTINUE

*
```

4. Begin editing a long file, giving the F (find) command to EDIT. Give a CTRL/C and then the M command to return to TOPS-20 command level. Give the CONTINUE STAY command and then INFORMATION FILE-STATUS commands to check the progress of EDIT as it searches through the file. (Notice that the byte position shown in response to successive INFORMATION FILE-STATUS commands grows larger.) Finally, give the CONTINUE NORMALLY command to return to EDIT so you can give more EDIT program commands.

```
@EDIT DOC-PLAN.MEM
Edit: DOC-PLAN.MEM.1
*FABCO$
Yes? (Type H for help): M
@CONTINUE STAY
@INFORMATION FILE-STATUS
 Connected to PS:<LATTA>,  JFNS:
 4    <LOADTEST>EDIT.EXE.4        Read,Execute
 3    EDIT-BUFFER.OUT.100046      Read,Write,0.(7)
 2    DOC-PLAN.MEM.1        Read,43520.(7)
 1    <SYSTEM>EXEC.EXE.153        Read,Execute

 Device assigned to/opened by this job: TTY222

@INFORMATION FILE-STATUS 2
 2    DOC-PLAN.MEM.1        Read,112640.(7)
@INFORMATION FILE-STATUS 2
 2    DOC-PLAN.MEM.1        Read,130560.(7)
@CONTINUE

*
```

CONTINUE (Cont.)

5. Start compiling a long file. After compilation has begun, give a CTRL/C to stop it and return to the TOPS-20 command processor. Use CONTINUE STAY to resume compilation, and then PUSH to receive a new TOPS-20 command level. Edit a text file at this lower level, then give the POP and CONTINUE commands to return to the compilation in progress. The compiler finishes, in this case, after you have done so.



```
@COMPILE DUMPER.MAC
MACRO:   DUMPER
^C
@CONTINUE STAY
@PUSH

 TOPS-20 Command processor 4(555)
@EDIT PROFIL.TXT
Edit: PROFIL.TXT.2
*SAPRIL$JUNE$^:*
00100    JUNE 19, 1978
00500    JUNE 12
00750    JUNE 5
00900    JUNE 18
01400    JUNE 21
*E

[PROFIL.TXT.3
@POP
@CONTINUE

EXIT
@
```

COPY

Function

The COPY command makes a copy of an existing file and stores it under a new file specification. The file remains under its old specification also.

Format

```
@COPY (FROM) source filespec (TO) destination filespec,
@@subcommand
```

where

source filespec — is the specification of the file or device whose contents you want to copy

destination filespec — is the specification of the file or device in which you want to store a copy of the file
Default - same as source filespec but in your connected directory, if necessary using the next higher generation number

@@subcommand — means that after a final comma you can type an optional keyword, specifying the mode or format of information transfer, as described below

COPY Command Subcommands

(when used with the paper tape reader or paper tape punch - PTR: or PTP:)

ASCII {PARITY
NOPARITY} — specifies that the file being copied is written in ASCII mode, with 36-bit words each consisting of five 7-bit bytes and a parity bit; the PARITY argument is not currently in use; NOPARITY (the default) means that the eighth hole of the paper tape is never punched.

BINARY — specifies that the file being copied is composed of 36-bit words, each consisting of six 6-bit bytes with the seventh hole of the paper tape set always to 0 and the eighth hole set always to 1; causes a checksum calculation.

COPY (Cont.)

COPY Commands Subcommands (Cont.)

BYTE n

specifies that the byte size of the destination file is to be n (any decimal number). If you do not give the BYTE subcommand, the destination file will have the same byte size as the source file. See also Hints - Viewing Display Screen Data below.

IMAGE

specifies that the file being copied is composed of 36-bit words, each consisting of one 8-bit byte; the 28 most significant bits are set to 0 on input and are lost on output.

IMAGE BINARY

same as BINARY, but lacking the checksum calculation

COPY Command Subcommands

(when used with devices other than the paper tape reader or paper tape punch)

ASCII {PARITY
NOPARITY

specifies that the file being copied is written in ASCII mode, with 36-bit words each consisting of five 7-bit bytes and a parity bit; the PARITY argument is not currently in use; NOPARITY (the default) means that the least significant bit is set to 0 on input and is lost on output.

BINARY

calls for a direct transfer of data in 36-bit bytes

BYTE n

specifies that the byte size of the destination file is to be n (any decimal number). If you do not give the BYTE subcommand, the destination file will have the same byte size as the source file. See also Hints - Viewing Display Screen Data, below.

IMAGE

same as BINARY

IMAGE BINARY

same as BINARY

Output

As each file is copied, the system prints the specifications of the source and destination files and the word [OK]. The delay before you see this [OK] indicates how long it took to copy the file. If you use recognition on the destination file specification, the system prints, !New Generation!, !New File!, or !Superseding!, to indicate the status of disk files, or !OK!, if the file is copied to a non-disk device.

Characteristics

Normal Operation - No Subcommands

For most purposes you do not need subcommands when copying files. When you do not use subcommands the information is copied as written, whether in a standard format (usually ASCII or BINARY) or not.

Optional Subcommands With Paper Tape

Each subcommand, when used to copy information from the paper tape reader (PTR:), specifies an interpretation of eight-bit bytes, representated as eight-hole lines on paper tape. When used with the paper tape punch (PTP:), each subcommand specifies a mapping of information to the eight-bit bytes of paper tape.

Optional Subcommands With Other Devices

Each subcommand can be used under particular conditions, e.g., when transferring files over network facilities (using DCN: and SRV:), to specify the byte size of information being copied. In general, you can use COPY command subcommands whenever you need to specify the byte size of information being copied.

Hints

RENAME Faster Than COPY for Transferring Files

For moving a set of files from one directory to another on the same structure, the RENAME command is a faster and more efficient means than COPY.

Using Devices as Source and/or Destination Filespecs

By specifying a device as the source and/or destination filespec, you can use the COPY command to transfer information between card- or paper-tape-handling devices, magnetic tape drives, line printers, terminals, or other output devices. However, the PLOT, PRINT, PUNCH and TYPE commands, and appropriate utility programs (e.g., DUMPER and EDIT), offer more flexibility for most applications.

Copying To or From TTY:

You can simulate the action of the CREATE command for creating files by copying from device TTY: to a new filespec, ending your input with a CTRL/Z; use CTRL/U, CTRL/R, CTRL/W, and the DELETE key to edit the current line of terminal input. You can simulate the action of the TYPE command for displaying files by copying from an existing filespec to device TTY:.

Viewing Display Screen Data

If you specify TTY: as the destination filespec and then give the BYTE 8 subcommand, characters in the source file will be sent literally to your terminal. Do this to examine special display screen data.

Spooled Output Action

If you send information to output devices using the COPY command, your request is processed according to the status of the SPOOLED-OUTPUT-ACTION parameter, which you set with the SET SPOOLED-OUTPUT-ACTION command.

Using Wildcards in Source and/or Destination Filespecs

You can use wildcard characters (* and %) in source and/or destination filespecs to copy many files at a time. Default values will be assumed for filespec fields you do not specify. Note that if you use wildcard characters to copy more than one source file into a single destination file on disk, the contents of each source file will appear in a different generation of the destination file; the highest generation will contain a copy of the last source file only. Use the APPEND command to put the contents of several files into a single file.

Specifying a New Account or Protection Number

The COPY command lets you specify the new file's protection number, and the account to which storage fees for it will be charged. Follow the new file specification with a semicolon (;) and the letter P before giving a new 6-digit protection number, and with a semicolon and the letter A before giving a new account (which must be valid for your user name). If you do not specify an account for a new file, it will take as default the account you gave in your most recent LOGIN or SET ACCOUNT command. However, non-default protection numbers will be maintained for higher generations of existing files, unless you specify otherwise in the COPY command that creates that higher generation.

Restrictions

Copying Archived Files

You can make a copy of an archived file by specifying it as the first (or source) argument in a COPY command, and specifying a file of different name or type as destination. You can edit the new file, because it does not have archive status although it has the same contents as the original file. However, you cannot give the specification of an archived file as the second (or destination) argument of a COPY command, as this would replace the file's contents. If you attempt to do so, whatever source argument you supply will be copied into the next higher generation of the archived file, leaving the archived file intact. However, if you include the generation number when specifying an archived file as the second argument of a COPY command, the command will fail.

Files of Type .DIRECTORY

You cannot copy subdirectories, which appear as files of type .DIRECTORY in the immediately superior directory.

Warning

Destroying the Previous Contents of Files

If you give a destination file specification that includes a generation number, the source file will be copied into that file, replacing any previous contents if that generation of the file already exists. Those contents cannot be recovered. But see Restrictions - Copying Archived Files, above.

Effect on Memory and Terminal

The COPY command does not affect memory and leaves your terminal at TOPS-20 command level.

COPY (Cont.)

Related Commands

APPEND — for adding information to a file or putting the contents of many files into a single file

RENAME — for changing only the specification of a file

SET SPOOLED-OUTPUT-ACTION — for changing the setting of the SPOOLED-OUTPUT-ACTION parameter, which determines when files copied to output devices are processed

Examples

1. Make an extra copy of a file in your connected directory.

```
@COPY FORT.TXT BACKUP.TXT
 FORT.TXT.1 => BACKUP.TXT.3 [OK]
@
```

2. Copy a file from your directory into another user's directory, allowing it to be labeled with default file specifications there.

```
@ACCESS <SARTINI>
Password:
@COPY TEST1.CBL <SARTINI>
 TEST1.CBL.2 => <SARTINI>TEST1.CBL.2 [OK]
@END-ACCESS <SARTINI>
@
```

3. Use a wildcard character to copy several files from your directory on another structure to magnetic tape.

```
@ACCESS SNARK:
@COPY SNARK:NA*.TST MT2:
 SNARK:NACCESS.TST.2 => MT2:NACCESS.TST [OK
 SNARK:NADVISE.TST.2 => MT2:NADVISE.TST [OK]
 SNARK:NAPPEND.TST.2 => MT2:NAPPEND.TST [OK]
 SNARK:NASSIGN.TST.2 => MT2:NASSIGN.TST [OK]
 SNARK:NATTACH.TST.2 => MT2:NATTACH.TST [OK]
@END-ACCESS SNARK:
@
```

4. Use the COPY command to create a short text file.

```
@COPY TTY: NEW-FILE.TXT
 TTY: => NEW-FILE.TXT.2

THIS FILE WAS CREATED USING THE COPY COMMAND.
^Z
@TYPE NEW-FILE.TXT
THIS FILE WAS CREATED USING THE COPY CDMMAND.
@
```

CREATE

Function

The CREATE command lets you make files.

Format

```
@CREATE (FILE) /switch(es) filespec
```

where

switches — are keywords, chosen from the list below, indicating your choice of CREATE command options
Defaults are shown in the list of switches

filespec — is a specification for the file you want to create
Default - the last file specification and associated switches you gave in a CREATE or EDIT command during the current terminal session

Summary of CREATE Command Switches (defaults in boldface)

/BAK	
/C128	
/C64	
/DECIDE	
/DPY	
/EXPERT	
/INCREMENT:n	**Default n - 100**
/ISAVE:n	
/LOWER	
/M33	
/M37	
/NOBAK	
/NODECIDE	
/NONSEPARATORS	
/NONUMBER	
/NOVICE	
/NUMBER	
/OLD	
/OPTION:name	
/PLINES:n	Default n - 16
/R	
/READONLY	
/RONLY	
/RUN:filespec	Default file type - .EXE
/SAVE:n	
/SEPARATORS	
/SEQUENCE	
/START:n	Default n - argument of /INCREMENT switch
/STEP:n	**Default n - 100**
/UNSEQUENCE	
/UPPER	
/WINDOW:n	Default n - 10

CREATE Command Switches

/BAK causes an unedited copy of the file to be saved at the end of an editing session under specification name.Qyp, where name.typ is the file's original specification
Default

/C128 calls for a 128-character alphabet, allowing insertion of control characters in an alternate format. See the TOPS-20 EDIT Reference Manual for details.

/C64 calls for a 64-character alphabet, disallowing use of an alternate format for insertion of control characters
Default

/DECIDE lets you decide whether to accept or reject each change caused by the operation of the S (substitute) command of the EDIT program

/DPY has no effect in the current monitor

/EXPERT tells the EDIT program that you need only abbreviated error messages, and fewer warnings and reminders

/INCREMENT:n specifies the value to add to each line number of the file to obtain the next line number
Default n - 100

/ISAVE:n instructs the EDIT program to update the backup file of specification name.Qyp after every n lines you insert

/LOWER specifies that all alphabetic characters you type should be considered lowercase characters; give uppercase characters by preceding the corresponding lowercase character with a single quotation mark (').

/M33 has no effect in the current monitor

/M37 has no effect in the current monitor

/NOBAK prevents an unedited copy of the file from being saved at the end of an editing session under specification name.Qyp, where name.typ is the file's original specification

/NODECIDE ensures the automatic operation of the S (substitute) command of the EDIT program
Default

CREATE (Cont.)

CREATE Command Switches (Cont.)

/NONSEPARATORS — specifies that the characters . (period), $ (dollar sign), and % (percent sign) are ordinary textual characters and not field delimiters (separators) in the accompanying file
Default

/NONUMBER — suppresses the printing of line numbers with each line of a file

/NOVICE — tells the EDIT program that you want to see complete error messages and all appropriate warnings; opposite of /EXPERT switch
Default

/NUMBER — prints a line number for each line of the file
Default

/OLD — causes the first backup file to be saved under the specification name.Zyp, where name.typ is the file's original specification

/OPTION:name — sets any EDIT switches contained in lines of the SWITCH.INI file in your log-in directory labeled with name (of 6 or fewer characters). See the <u>TOPS-20 EDIT Reference Manual</u> for more information about SWITCH.INI files.

/PLINES:n — specifies how many lines to print in response to each P (print) command of the EDIT program
Default n - 16

/R — same as /READONLY

/READONLY — prevents any changes to the file during the current session of the EDIT program, i.e., makes it a read-only session

/RONLY — same as /READONLY

/RUN:filespec — specifies an executable program to be run when you end the current session of the EDIT program with the G command
Default file type - .EXE

/SAVE:n — instructs the EDIT program to update the backup file (of specification name.Qyp) after every n EDIT program commands that modify the file

CREATE Command Switches (Cont.)

/SEPARATORS — notifies the EDIT program that the characters . (period), $ (dollar sign), and % (percent sign), are not ordinary textual characters but are field separators in the accompanying file

/SEQUENCE — tells the EDIT program not to strip the line numbers from the file when the EDIT session ends
Default

/START:n — specifies the first line number for the EDIT program to use when numbering the file
Default n - argument of /INCREMENT switch

/STEP:n — same as /INCREMENT

/UNSEQUENCE — tells the EDIT program to strip the line numbers from the file when the EDIT session ends

/UPPER — specifies that all alphabetic characters you type should be considered uppercase characters; give lowercase characters by preceding the corresponding uppercase character with a single quotation mark (').
Default

/WINDOW:n — specifies the number n (between 10 and 99) of pages to be held in memory during the EDIT session
Default n - 10

Characteristics

Input Mode and Edit Mode

The CREATE command runs the EDIT system program, first in Input mode and then in Edit mode. (However, see also Special Cases, below.) Input mode automatically begins each line with a line number (unless you have given the /NONUMBER switch), and allows you to put any alphabetic or numeric information into the file. When you have finished doing this and press the ESCAPE key, the EDIT program puts you into Edit mode and prompts you with an asterisk (*), just as if you had typed the EDIT command with the specifications of the newly-created file as argument. If you want to save the file in its present state, give the E (for end) command to the EDIT program. Otherwise you can give any other EDIT command to change or add to the file before saving it.

Hints

Saving Backup Files Periodically

Give the /ISAVE:n switch to save an updated copy of the file you are creating after every n lines inserted. Then you will lose only a few lines of input in the event of a system failure. The similar /SAVE:n switch is useful for the CREATE command only in Edit mode, where it saves an updated copy of the file after every n EDIT program commands that modify the file.

SWITCH.INI File

If there is a group of CREATE command switches that you always or often use with CREATE or EDIT commands, put them into a file of specification SWITCH.INI in your log-in directory, in a line of that file beginning with EDIT:abc, where abc is any set of characters you choose to identify the line. Then if you include the single switch /OPTION:abc when you give a CREATE or EDIT command, all these switches will be in effect.

Further Information

For more information about the EDIT program, see the TOPS-20 EDIT Reference Manual.

Special Cases

Using an Editor Other than EDIT

The CREATE and EDIT command descriptions in this manual assume that these commands call on the EDIT program for their action. If your job uses another editing program (e.g., TV, the editor designed especially for use with display terminals), the switches and examples shown here will not be applicable. The editor used by CREATE and EDIT is specified by logical name EDITOR:, so you can find out the name of this program by giving the command, INFORMATION LOGICAL-NAMES EDITOR:. The system-wide definition will be given first, followed by the job-wide definition (if any); the job-wide definition prevails if both exist. If the definition of EDITOR: is SYS:EDIT.EXE, the CREATE and EDIT commands will function as described in this manual. Otherwise, you must consult the appropriate manual (e.g., the TOPS-20 TV Editor Manual) for information.

You can use the DEFINE command to define logical name EDITOR: to be any editing program available at your installation. Then this editor will be in effect when you give the CREATE or EDIT command.

Effect on Memory

The CREATE command clears memory, then loads the EDIT program into memory, and leaves your terminal at command level (Input mode) in EDIT.

Related Commands

DIRECTORY-class commands	for getting lists of existing files
EDIT	for modifying existing files

Examples

1. Create a file.

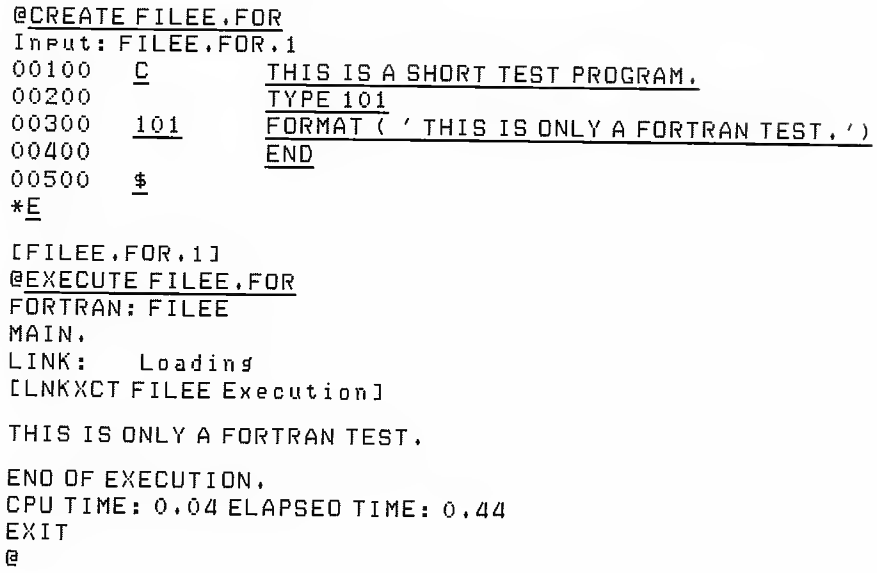
```
@CREATE FILE1.TXT
Input: FILE1.TXT.1
00100   !THIS IS A SHORT TEXT FILE.
00200   $
*E

[FILE1.TXT.1]
@
```

2. Create and edit (using the P and R commands to the EDIT system program) another file.

```
@CREATE FILEB.TXT
Input:FILEB.TXT.1
00100    !THIS IS ANOTHER SHORT TEXT FILE.
00200    $
*P
00100    !THIS IS ANOTHER SHORT TEXT FILE.
*R100
00100    !THIS IS A SECOND TEXT FILE.
00200    $
1 Lines (00100/1) deleted
*P
00100    !THIS IS A SECOND TEXT FILE.
*E

[FILEB.TXT.1]
@
```

CREATE (Cont.)

3. Create, then execute, a FORTRAN program.



```
@CREATE FILEE.FOR
Input: FILEE.FOR.1
00100   C          THIS IS A SHORT TEST PROGRAM.
00200              TYPE 101
00300   101        FORMAT ( ' THIS IS ONLY A FORTRAN TEST.')
00400              END
00500   $
*E

[FILEE.FOR.1]
@EXECUTE FILEE.FOR
FORTRAN: FILEE
MAIN.
LINK:    Loading
[LNKXCT FILEE Execution]

THIS IS ONLY A FORTRAN TEST.

END OF EXECUTION.
CPU TIME: 0.04 ELAPSED TIME: 0.44
EXIT
@
```

CREF

Function

The CREF command runs the CREF program, which produces cross-reference listings from files of type .CRF.

Format

@CREF destination filespec=source filename

where

destination filespec — is the name of the file or device to which you want to send the processed contents of the .CRF file
Default - LPT:

source filename — is the name of the .CRF file you want to process
Default - the names of all files of type .CRF produced during the current terminal session

Characteristics

Current .CRF Files

If you have files of type .CRF produced by LOAD-class commands during the current terminal session, the unmodified command CREF produces listings of them and deletes the files. By supplying an argument of the form shown in the Format section above, you can copy the listing for a current .CRF file to another file or device. To run the CREF program yourself when you have current .CRF files, give the command R CREF instead.

.CRF Files From a Previous Session

If your only files of type .CRF produced by the .CRF program were produced during a previous terminal session, the command CREF puts your terminal at command level in the CREF program, symbolized by an asterisk (*). Thus it is equivalent to the command R CREF in this case. See Hints - Further Information, below, for advice on how to proceed.

Hints

Producing .CRF Files

You can produce cross-reference files by including the /CREF switch in any LOAD-class command that actually causes a compilation (i.e., is not prevented from doing so by a /RELOCATABLE switch or by the existence of current object files).

CREF (Cont.)

Preserving .CRF Files After Processing

Give the /P switch immediately after the CREF command to preserve .CRF files. Ordinarily they are deleted after being sent to an output device or copied into another file.

Further Information

For more detailed information about the CREF program, including all available switches, give the HELP CREF command. See Chapter 8 of the TOPS-20 User Utilities Guide for a full description of CREF.

Effect on Memory and Terminal

The CREF command replaces the contents of memory with the CREF program and leaves your terminal at TOPS-20 command level, or at command level within CREF (denoted by an asterisk prompt (*)).

Related Commands

LOAD-class commands	for producing .CRF files

Examples

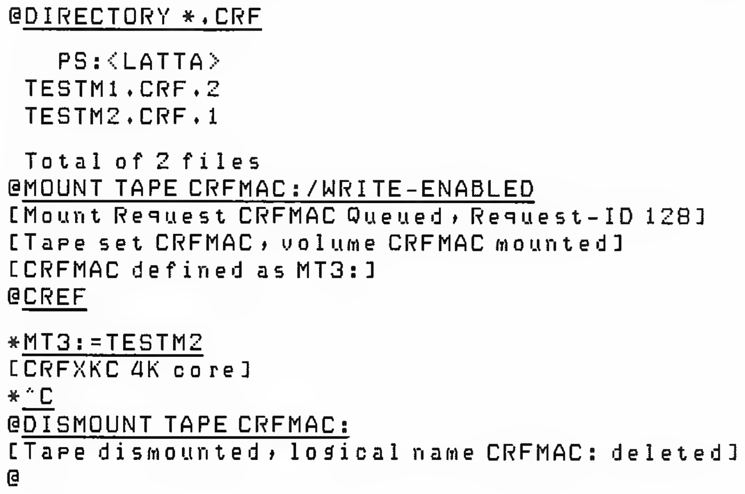
1. Give the CREF command to obtain a listing of your .CRF file.

```
@CREF
CREF:   TESTF1
@
```

2. Compile two FORTRAN programs, using the /CREF switch to produce .CRF files. Then give the CREF command to obtain listings of these, and use the /P switch to preserve the .CRF files.

```
@COMPILE /CREF TESTF1.FOR,TESTF2.FOR
FORTRAN: TESTF1
MAIN.
FORTRAN: TESTF2
MAIN.
@CREF/P
CREF:   TESTF1
CREF:   TESTF2
@
```

3. Determine what .CRF files you have, then mount a tape. Give the CREF command, and once within the CREF program, have the cross-reference listing produced from one of these files copied onto tape. (The .CRF files are not processed automatically when you give the CREF command because they were produced during a previous terminal session.)



```
@DIRECTORY *.CRF

   PS:<LATTA>
 TESTM1.CRF.2
 TESTM2.CRF.1

 Total of 2 files
@MOUNT TAPE CRFMAC:/WRITE-ENABLED
[Mount Request CRFMAC Queued, Request-ID 128]
[Tape set CRFMAC, volume CRFMAC mounted]
[CRFMAC defined as MT3:]
@CREF

*MT3:=TESTM2
[CRFXKC 4K core]
*^C
@DISMOUNT TAPE CRFMAC:
[Tape dismounted, logical name CRFMAC: deleted]
@
```

CSAVE

Function

The CSAVE command makes a non-sharable copy of the program in memory and stores it in a file, in compressed executable format.

Format

```
@CSAVE (ON FILE) filespec (WORDS FROM) loc1 (TO) loc2, loc3 loc4,...
```

where

filespec — is the file specification under which you want to store the program
Default filespec - program name.EXE

loc1 loc2, loc3 loc4, ... — are pairs of octal numbers or symbolic expressions that specify the span(s) of memory locations you want to save
Default loc1 loc2 - 20 to last location occupied by program

Caution

Inefficiency of CSAVE Compared to SAVE

The CSAVE command saves in a compressed-formatted file whatever program the system finds in memory. When the file is returned to memory, this format prevents other users from sharing the same copy of the file. Therefore you should ordinarily use the SAVE commmand instead for storing programs in executable format.

Effect on Memory and Terminal

The CSAVE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

GET	for putting a saved file into memory
LOAD	for putting source or output files into memory
RUN	for running executable programs
SAVE	usual command for saving programs in executable format

Examples

1. Save your currently loaded program in compressed executable format.

```
@CSAVE
 DMN.EXE.1 Saved
@
```

2. Mount a magnetic tape set. Then load an ALGOL program and save it in three places in executable format: once in a disk file under the same filename, again in a disk file under a new filename, and once on magnetic tape.

```
@MOUNT TAPE TAPBAK: /WRITE-ENABLED
[Mount Request TAPBAK Queued, Request-ID 140]
[Tape set TAPBAK, volume TAPBAK mounted]
[TAPBAK defined as MT2:]
@LOAD TESTA1
LINK:    Loading

EXIT
@CSAVE
 TESTA1.EXE.1 Saved
@CSAVE BAK
 BAK.EXE.1 Saved
@CSAVE MT2:
 MT2:BAK Saved
@DISMOUNT TAPE TAPBAK:
[Tape dismounted, logical name TAPBAK: deleted]
@
```

DAYTIME

Function

The DAYTIME command prints the current day, date, and time on your terminal.

Format

```
@DAYTIME
```

Hints

Using DAYTIME

The DAYTIME command, which does not require you to be logged in, lets you check the system's clock against your own. If you are saving the output from a hard-copy terminal, use this command to make a record of the date and time.

Effect on Memory and Terminal

The DAYTIME command does not affect memory and leaves your terminal at TOPS-20 command level.

Examples

1. Give the DAYTIME command.

```
@DAYTIME
 Friday, April 20, 1979 09:21:19
@
```

DDT

Function

The DDT command loads or merges a debugging program into memory (unless one is already there), then starts it.

Format

@DDT/switch

where

/switch is /USE-SECTION:n
specifies the memory section (from 0 to 37 octal) into which the debugging program is to be loaded, run, or merged

Characteristics

If a Debugging Program is Already Loaded

If you have already loaded a debugging program into memory along with your program, the DDT command starts the debugging program.

If Your Program, But Not a Debugging Program, is Already Loaded

If a program containing symbols is in memory without a debugging program, the DDT command merges SYS:UDDT.EXE into memory, then starts this debugging program.

If There is No Current Program

If you do not have a program in memory, or if your program does not contain symbols, the DDT command puts SYS:SDDT.EXE into memory and starts it.

Hints

Using DDT to Create a Program

You can use DDT to begin typing instructions directly into memory, without first putting it into a file for later compilation and loading. Give a RESET command to clear memory, then the DDT command. This will load the SYS:SDDT.EXE program. Then you can give commands within SDDT to create your own program. When using the SDDT program, you can use all the symbols in the system parameter file MONSYM.MAC. See the TOPS-20 Monitor Calls Reference Manual for more information about MONSYM.MAC. This method of writing a program is most useful for testing special cases, or for learning to use TOPS-20 monitor calls.

DDT (Cont.)

Special Cases

Using COBDDT

If you put COBDDT into memory along with a COBOL program, the DDT command starts the UDDT program, not COBDDT. Use the REENTER command to start COBDDT in this case.

Effect on Memory and Terminal

The DDT command merges the SYS:UDDT.EXE program into memory and starts it, or loads and starts SYS:SDDT.EXE. If you have already loaded a debugging program, the DDT command starts this program. In each case your terminal is left at command level in the debugging program.

Related Commands

DEBUG	for loading your program along with a particular debugging program (e.g., FORDDT or COBDDT)

Examples

1. Give the DDT command to begin debugging a program currently in memory.

```
@DDT
DDT
```

2. Give the DEBUG command to debug a FORTRAN program; type a CTRL/C to return to TOPS-20 command level so you can find out the current load averages and number of jobs for the system. Return to your debugging program (FORDDT in this case) by giving the DDT command.

```
@DEBUG TESTF1
LINK:   Loading
[LNKDEB FORDDT Execution]

STARTING FORTRAN DDT

>> ^C
@SYSTAT SYSTEM
 Fri 20-Apr-79 13:50:01   Up 36:47:55
 35+14 Jobs   Load av (class 0)   0.72   0.81   1.33
```

```
@DDT

STARTING FORTRAN DDT

>> START

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.04 ELAPSED TIME: 0.33
EXIT
@INFORMATION MEMORY-USAGE

 66. pages, Entry vector loc 0 len 254000
0-12       Private    R, W, E
400        Private    R, W, E
401-466    <SUBSYS>FOROTS.EXE.3   3-70    R, CW, E

@
```

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DEASSIGN

Function

The DEASSIGN command returns a device previously assigned by you back to the pool of available resources.

Format

```
@DEASSIGN (DEVICE) dev:
```

where

dev: is the name of the device you want to deassign; an asterisk (*) deassigns all devices (except your log-in terminal) assigned to your job.

Restrictions

Open Files

The DEASSIGN command will not deassign a device that is accessing an open file. An error is generated, and the device is not deassigned until that file is closed or until you log out. When you log out, all devices are deassigned.

Effect on Memory and Terminal

The DEASSIGN command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

ASSIGN	for assigning a particular device to your job
INFORMATION AVAILABLE DEVICES	for finding out which devices are available, and which ones have already been assigned to your job
MOUNT	for mounting a structure or magnetic tape and assigning the first available disk drive or tape drive to your job

Examples

1. Deassign a device (in this case a card reader).

   ```
   @DEASSIGN PCDR0:
   @
   ```

2. Find out which devices are assigned to your job, then deassign all of these. Verify that this was done. (Note that your terminal, in this case TTY222:, is never deassigned.)

   ```
   @INFORMATION AVAILABLE DEVICES
   Devices available to this job:
    DSK, PS, SNARK, PACK, FTN20, MTA2, MT0, LPT, LPT0, LPT1
    CDR, PCDR0, CDP, FE1-15, PTY15-61, NUL, PLT, PLT0, DCN
    SRV
   Devices assigned to/opened by this job: MTA2, MT0, PCDR0
    TTY222, PTY15
   @DEASSIGN *
   @INFORMATION AVAILABLE DEVICES
   Devices available to this job:
    DSK, PS, SNARK, PACK, FNT20, MTA2, LPT, LPT0, LPT1
    CDR, PCDR0, CDP, FE1-15, PTY15-61, NUL, PLT, PLT0
    DCN, SRV
   Devices assigned to/opened by this job: TTY222
   @
   ```

DEBUG

Function

The DEBUG command loads your program into memory along with a debugging program, compiling the source file first if necessary. Then it starts the debugging program.

Format

```
@DEBUG (FROM) /switch(es) source/switch(es)  object,...
```

where

switches — are keywords chosen from the list below, indicating your choice of DEBUG command options. They have different effects depending on their position in the command line: placed before all files in the command, they act as defaults for all; otherwise, they affect only the nearest preceding file.

Defaults are shown in the list of switches

source — is the file specification of the source program. The filename must be of 6 or fewer characters, and the file type of 3 or fewer characters; you cannot use a generation number. This argument is not necessary if you supply an object filespec.

object — is the file specification of the object program. The filename must be of six or fewer characters, and the file type must be .REL; you cannot use a generation number. This argument is not necessary if you supply a source filespec.

Default (if you give neither source nor object filespecs) - last filespecs and associated switches you gave in a LOAD-class command

,... — means that, after commas, you can give more arguments (source, switches, and object) of the form already shown

Summary of DEBUG Command Switches (defaults in boldface)

/68-COBOL
/74-COBOL
/ALGOL
/COBOL
/COMPILE
/CREF
/DDT
/DEBUG
/FORTRAN
/LANGUAGE-SWITCHES:"/switch(es)"
/LIBRARY
/LIST
/MACRO

/MAP
/NOCOMPILE
/NODEBUG
/NOLIBRARY
/NOLIST
/NOOPTIMIZE
/NOSEARCH
/OPTIMIZE
/RELOCATABLE
/SEARCH
/STAY
/SYMBOLS

Descriptions of these switches are given below. Although the system will not reject switches described under any of the LOAD-class commands, only those switches commonly associated with DEBUG are described here.

DEBUG Command Switches

/68-COBOL — compiles the file using the COBOL-68 compiler
Default for files of type .CBL

/74-COBOL — compiles the file using the COBOL-74 compiler

/ALGOL — compiles the file using the ALGOL compiler

/COBOL — compiles the file using the COBOL-68 compiler

/COMPILE — forces compilation of the source file even if a current object file already exists. Use this switch along with a /LIST or /CREF switch to obtain listings when you have current object files.

/CREF — creates a file containing cross-reference information for each compilation. The filename is that of the object file; the file type is .CRF. Use the CREF command to obtain a listing of the file. (For COBOL files, this switch automatically produces a cross-reference listing.) See the <u>TOPS-20 User Utilities Guide</u> for more information about the CREF program.

/DDT — loads the DDT debugging program along with your object file

/DEBUG — produces an object file containing debugging information beyond what is usually inserted during compilation. (For FORTRAN programs only, and only if you have not given the /OPTIMIZE switch.)

/FORTRAN — compiles the file using the FORTRAN compiler
Default for switches specifying a compiler language, in the

DEBUG Command Switches (Cont.)

/LANGUAGE-SWITCHES:"/switch(es)"

passes the specified switches to the compiler that will process the file(s) to which this switch applies. You must include the switches in double quotation marks (" ").

/LIBRARY

same as /SEARCH

/LIST

prints a line printer listing of the program in ASCII format; the name of this listing is the filename of the object file. The /CREF switch overrides /LIST when they both apply to the same file.

/MACRO

assembles the files using the MACRO assembler

/MAP

produces a loader map and stores it in the file object.MAP, where object is the name of the module containing the start address; or (if no start address) nnnLNK.MAP, where nnn is your job number.

/NOCOMPILE

prevents compilation if the associated object file is current; otherwise it forces compilation. Use this switch to cancel a /COMPILE or /RELOCATABLE switch.
Default

/NODEBUG

excludes special debugging information from your object file. (For FORTRAN programs only.)

/NOLIBRARY

same as /NOSEARCH

/NOLIST

prevents a line printer listing of the program
Default

/NOOPTIMIZE

prevents the generation of a globally optimized object file. (For FORTRAN programs only.)
Default

/NOSEARCH

requires all modules in the object file library (the file accompanied by this switch in the command line) to be loaded even if they are not called by your program. Use this switch to cancel a /SEARCH switch.
Default

/OPTIMIZE

calls for generation of a globally optimized object file, i.e., one that runs as quickly as possible. (For FORTRAN programs only, and only if you do not also give the /DEBUG switch.)

DEBUG (Cont.)

DEBUG Command Switches (Cont.)

/RELOCATABLE — prevents compilation of the source file, forcing use of an existing object file even if the object file is out of date

/SEARCH — requires that the object file library (the file accompanied by this switch in the command line) be searched for modules called by your program or by a program subroutine. Only these modules are loaded, along with modules called from the system libraries, which are always searched.

/STAY — returns your terminal to TOPS-20 command level so that you can perform other work while the system continues executing the DEBUG command. You immediately receive the TOPS-20 prompt (@ or $) and can then issue any user command. But be careful with commands that run programs, because those commands may clear memory and terminate the current process. Also, you could easily send incorrect data to programs expecting terminal input. This switch saves you from having to: issue a ^T to make sure the debugger has begun; give a ^C to halt debugging; and issue a CONTINUE STAY command to remain at command level during debugging.

/SYMBOLS — loads a symbol table along with the object file; helpful for debugging a program.
Default

Characteristics

Compiling New Sources Only

Before debugging programs, the system ordinarily compiles any source (and only those sources) whose write date is more recent than that of the object file of the same name. You can override this action with the /COMPILE or /RELOCATABLE switch. Note that the DDT debugging program is used when /RELOCATABLE prevents a new compilation.

Using Standard File Types

If you specify source files with standard types (.FOR, .MAC, .CBL, or. ALG) in a DEBUG command, the system automatically calls the appropriate compiler when compilation is necessary. If you specify source files by filename only, the system searches your connected directory in the above order for a file of this name and a standard type. To debug programs from sources that have nonstandard file types, give a switch to indicate the proper compiler (/FORTRAN, /MACRO, /COBOL, or /ALGOL). A switch will take precedence over a standard file type if they indicate different languages. If no compiler is indicated with either a switch or a standard file type, the FORTRAN compiler is used.

Name of Debugging Program Loaded by DEBUG

Ordinarily the DEBUG command causes the appropriate debugging program to be loaded along with your program (FORDDT with FORTRAN programs. COBDDT with COBOL programs, DDT with MACRO and ALGOL programs). Use the /DDT switch to specify that DDT be used.

Hints

Commas Between Filespecs

If you give two or more filespecs separated by commas as arguments to DEBUG, the loaded programs exist in memory at the same time and will act as a single program. You can use this feature to substitute one module for another under varying conditions or for different applications.

Plus Signs Between Filespecs

If you give two or more filespecs separated by plus signs (+) as arguments to DEBUG, they are treated as a single file by compilers. Their object module is stored under any filename given as the "object" argument of the command, or (if none) under the last filename in the group and file type .REL.

Indirect Files as Arguments

You can store the arguments (source and object filespecs, switches) of a DEBUG command in an indirect file, and specify them by typing an at sign (@) and its filespec as a DEBUG command argument.

Establishing Default Arguments with the SET Command

You can issue the SET DEFAULT COMPILE-SWITCHES command to set up default global arguments to the DEBUG command. Insert this SET command in your COMAND.CMD file to change your own defaults permanently.

Including all FORTRAN Debugging Information

If you are debugging a FORTRAN program and you wish to examine line numbers or DO loops, or use statement tracing or array dimension checking, give the /DEBUG and /COMPILE switches with the DEBUG command to include the necessary information.

Running LINK Directly

The DEBUG command automatically runs LINK, the system's loader program, but if you require control of the loading process you can run LINK directly. See the TOPS-20 LINK Reference Manual.

Restrictions

Switches Requiring Compilation

/CREF
/DEBUG
/LANGUAGE-SWITCHES
/LIST
/NODEBUG
/NOLIST
/NOOPTIMIZE
/OPTIMIZE

The above switches will not take effect unless the DEBUG command causes a new compilation of the relevant source file. See Characteristics - Compiling New Sources Only, above, for more information.

Effect on Memory and Terminal

The DEBUG command clears memory, loads the appropriate compiler if necessary, then loads your program and a compatible debugging program. It leaves your terminal at program command level within the debugging program.

Related Commands

COMPILE, LOAD, and EXECUTE	other LOAD-class commands for performing related functions
DDT	tor loading and starting the DDT debugging program, or for starting the debugging program you have already loaded

Examples

1. Debug a FORTRAN program.

```
@DEBUG FORT.FOR
FORTRAN: FORT
MAIN.
LINK:   LOADING
[LNKDEB FORDDT EXECUTION]
STARTING FORTRAN DDT

>>
```

2. Debug an optimized FORTRAN program, although there is a current (but not optimized) object file.

```
@DEBUG /OPTIMIZE/FORTRAN/COMPILE FORT

FORTRAN: FORT
MAIN.
LINK:   LOADING
[LNKDEB FORDDT EXECUTION]

STARTING FORTRAN DDT

>>
```

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3. Using incompatible switches, try to debug a program. (The system ignores one of them and continues.)

```
@DEBUG /COMPILE/OPTIMIZE/DEBUG FORT
FORTRAN: FORT
%FTNNOD GLOBAL OPTIMIZATION NOT SUPPORTED WITH
/DEBUG - /OPT IGNORED
MAIN.
LINK:    LOADING
[LNKDEB FORDDT EXECUTION]

STARTING FORTRAN DDT

>>
```

4. Get a time-ordered list of TEST1 files in your directory. Debug an old version of it.

```
@TDIRECTORY TEST1.*
                 WRITE


   PS:<LATTA>
 TEST1.CBL.2      5-APR-78 13:10:57
   .LST.1         6-OCT-77 14:22:00
   .REL.1         6-OCT-77 10:08:17

 TOTAL OF 3 FILES
@DEBUG TEST1/RELOCATABLE
LINK:    LOADING
[LNKDEB DDT EXECUTION]
DDT
```

DEFINE

Function

The DEFINE command establishes or withdraws logical names for your job.

Format

```
@DEFINE (LOGICAL NAME) name:  list
```

where

name: is any combination of up to 39 alphanumeric characters followed by a colon, that you want to use as a logical name. Use an asterisk (*) for this argument to withdraw all logical names.

list is a series of devices, file structures, directories, file specifications, and/or other logical names; each item should be separated from the others by commas.

Default - not specifying a list withdraws the logical name definition

Hints

DEFINE in LOGIN.CMD File

Your DEFINE command is valid for the current terminal session only. If there are logical names that you always want to use, put DEFINE commands into a LOGIN.CMD (or, for batch jobs started by SUBMIT commands within the control files of other batch jobs, a BATCH.CMD) file in your log-in directory.

Redefining System Logical Names

You can use the DEFINE command to redefine any system logical name for your own job. By repeating a system logical name in its own search list you expand its definition to include the other items, in the order you specify. Consider the system logical name SYS:, which is searched whenever you give a program name in place of a TOPS-20 command. If you redefine SYS: to be str:<directory>, SYS: you can run programs in str:<directory> by typing just their names. This will work as long as the program names are not the same as TOPS-20 commands.

Logical Names as Dummy Filespecs

You can use logical names as dummies for filespecs or devices when writing programs. Then, just before running such a program, use the DEFINE command to define these as real filespecs or devices, without changing the program itself.

More Information

For more information about using logical names, see the TOPS-20 User's Guide.

Restriction

Using Short Logical Names Only

Although logical names can be up to 39 characters long and can include dollar signs ($), hyphens (-), and underlines (_), some commands and programs (e.g., programs originally written for the TOPS-10 operating system) accept a more limited set of logical names. These can be no more than 6 characters long and cannot include any special symbols. If all your logical names are of this kind, they will be acceptable to any TOPS-20 programs and commands.

Effect on Memory and Terminal

The DEFINE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION LOGICAL-NAMES	for finding out the current definitions of logical names

Examples

1. Define a logical name for your job.

```
@DEFINE LGN: <MANUALS>,<SARTINI>
@
```

2. Withdraw the logical name.

```
@DEFINE LGN:
@
```

3. Define a logical name to be a set of directories to which you have access. Then use the logical name to copy a file from one of them into your connected directory.

```
@DEFINE MSM: <MANUALS>,<SARTINI>,<MCELMOYLE>
@COPY MSM:4-UPED.TXT
 <MCELMOYLE>4-UPED.TXT.1 => 4-UPED.TXT.1 [OK]
@
```

DELETE

Function

The DELETE command marks one or more files for eventual erasure.

Format

```
@DELETE (FILES) filespec,...,
@@subcommand
```

where

filespec — is the specification of a file that you want to delete
Default .gen - all generations of the specified files

,... — means that after commas you can give more file specifications

@@ — means that after a final comma you can give subcommands on the next line

subcommand — is a keyword, chosen from the list below, indicating your choice of DELETE command options

DELETE Command Subcommands

ARCHIVE — both deletes the disk copy (if any) and gives up the tape copy of specified archived files

CONTENTS-ONLY — deletes and immediately expunges only the disk copy of files that also have a tape copy. Note that you must use the RETRIEVE command, not UNDELETE, to restore such files to disk.

DIRECTORY — deletes and immediately expunges directory files without making their disk space available to the files of other users; for users with enabled Wheel or Operator capabilities only.

EXPUNGE — immediately and permanently erases the specified files from the directory

DELETE Command Subcommands (Cont.)

FORGET — deletes and immediately expunges the specified files without making their disk space available to the files of other users; for users with enabled Wheel or Operator capabilities only.

KEEP n — saves the n most recent generations of the specified files while deleting the rest
Default n - 1

Output

Whenever an archived file is completely expunged as a result of your DELETE command (i.e., when you also give the ARCHIVE subcommand), the operator sends a MAIL message notifying the owner of the directory from which the file was taken. For this purpose, the owner of the directory is defined to be the user or users whose user names appear in a file of specification DIRECTORY.OWNER in the directory. If this file does not exist, the message is sent to MAIL.TXT in the directory. If neither file exists, no message is sent.

Characteristics

Privileged Subcommands to DELETE

The DIRECTORY and FORGET subcommands to the DELETE command are intended for privileged users only, and only as a last resort, because they withhold freed disk space from system use. Users with enabled Wheel or Operator capabilities can run the CHECKD program to recover this disk space. DIRECTORY should not be used unless the KILL subcommand to a BUILD command fails to delete the directory. FORGET is for removing damaged files from directories, and should not be used unless DELETE without subcommands fails to delete the file.

Hints

Removing Open Files

If DELETE with the EXPUNGE subcommand fails to erase a file, it may be that some job in the system has opened it. The INFORMATION FILE-STATUS command tells whether your own job has done so. If it has, give the CLOSE or (if the file is mapped) RESET command before repeating DELETE and EXPUNGE.

DELETE (Cont.)

Recovering Deleted Archived Files

If you have given the DELETE command with the ARCHIVE subcommand to delete an archived file, and the disk copy has already been expunged, you may still be able to recover the tape copy. The operator will send a MAIL message (see Output, above) concerning the discarded tape copy of the deleted file. Use this information, along with Hints - Undoing DISCARD, in the DISCARD command description, to attempt recovery of the deleted file.

Special Cases

Files With the "Permanent" Attribute

The system erases only the contents of any files that have the Permanent attribute (e.g., MAIL.TXT in your log-in directory) when you include them in a DELETE command. Their file specifications remain among your deleted files, and cannot be removed by TOPS-20 commands.

Restriction

Using Logical Names When Specifying Files for Deletion

If you include a logical name when specifying arguments to a DELETE command, the system will search for the specified file in only the first directory of the logical name's definition. This restriction prevents the accidental deletion of another file if the file you intended to delete has already been deleted.

Warning

Erasure of Deleted Files

Ordinarily an UNDELETE command given during the same terminal session as an original deletion will recover the deleted files, unless you included the EXPUNGE subcommand to DELETE or gave a subsequent EXPUNGE command. However, if any user or a batch job logs out while connected to your directory, all deleted files are permanently erased. Also, if available disk space is low on the system, the operator or the system itself may expunge all deleted files from structure PS: even though you have not logged out. A warning message is usually sent before this happens.

Effect on Memory and Terminal

The DELETE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DIRECTORY-class commands	for obtaining lists of file specifications
DISCARD	for deleting only the tape copy of on-line files
EXPUNGE	for permanently removing deleted files
INFORMATION DISK-USAGE	for finding out how much disk space is available, and how much is associated with deleted files
UNDELETE	for recovering deleted files

Examples

1. Delete two of your files.

```
@DELETE TTY.SCM, VERCBL.BAT
 TTY.SCM.1 [OK]
 VERCBL.BAT.2 [OK]
@
```

2. Delete all your object files and all your backup files produced by the EDIT program. Then log out (this will expunge them).

```
@DELETE *.REL, *.Q*
 TESTA1.REL.1 [OK]
 TESTF1.REL.1 [OK]
 TESTC1.QBL.2 [OK]
 TESTF1.QOR.4 [OK]
@LOGOUT
Killed Job 32, User J.L.PAGE, Account 341, TTY 41
  at 25-Apr-78 10:15:51, Used 0:1:46 in 1:23:59
```

DELETE (Cont.)

3. Delete some files, and check what files are currently deleted in your connected directory. Give the UNDELETE command for two of these, then expunge the remaining deleted files and verify that they are gone.

```
@DELETE *.QXT
 4-UPED.QXT.7 [OK]
 MAIL.QXT.1 [OK]
 REMARK.QXT.3 [OK]
@DIRECTORY,
@@DELETED
@@

   PS:<J.L.PAGE>
 4-UPED.QXT.1,2,3,4,5,6,7
   .TXT.7,8,9
 MAIL.QXT.1
 MEMO.QMO.1
 REMARK.QXT.1,2,3
 TTY.SCM.1
 VERCBL.BAT.2

Total of 17 files
@UNDELETE TTY.SCM, VERCBL.BAT
 TTY.SCM.1 [OK]
 VERCBL.BAT.2 [OK]
@EXPUNGE
 PS:<J.L.PAGE> [8 pages freed]
@DIRECTORY,
@@DELETED
@@
@
```

Function

The DEPOSIT command modifies the contents of a specific memory location.

Format

```
@DEPOSIT (MEMORY LOCATION) address (CONTENTS) data
```

where

address   is an octal number or a symbol

data   is a symbolic or numerical expression

Output

Status of Pages

When you complete a DEPOSIT command, the system gives you a message indicating the status of the page you are trying to change: "[New]" for previously nonexistent pages, "[Shared]" for those having Copy-on-Write status, or "?Can't write that page" for other pages. (See also Hints - Setting the Page-access of Memory Pages, below.) However, no message is printed for deposits made to private pages.

Hints

Using Symbols

For symbols that are defined in multiple modules of a program, you can be specific by giving the module name followed by an ampersand (&) and the symbol name.

Using DDT Instead

Usually the DEPOSIT command is unnecessary, as the DDT program provides more powerful methods for modifying the contents of memory.

Abbreviating DEPOSIT Arguments

The contents of each memory location are represented as two 6-digit octal numbers. By inserting a pair of commas between these two numbers, you can abbreviate them. For example, to deposit 000004000050 into memory location 151003, use the command

```
@DEPOSIT 151003 4,,50
```

This is the same as

```
@DEPOSIT 151003 4000050
```

Note that you can also insert commas between expressions. For example, the command

```
@DEPOSIT 1 1+3,, 5+7
```

deposits 000004000014 into memory location 1. (Expressions are considered to be octal unless they contain an 8 or a 9, in which case they are considered to be decimal and are translated to octal.)

The DEPOSIT command itself can be abbreviated by the single letter D.

Deposit Address Defaults to the One Examined, and Vice Versa

The first argument of a DEPOSIT command defaults to the address examined by your most recent EXAMINE command. (You must press the ESCAPE key to take this default.) The argument of an EXAMINE command defaults to the address whose contents were modified by your most recent DEPOSIT command. Therefore you can examine a memory location, deposit a new value in it, and verify your action, while specifying the location only once. If you give DEPOSIT commands without intervening EXAMINE commands (or vice versa), the default address increases by 1 for each subsequent command.

Setting the Page-access of Memory Pages

If the system responds to a DEPOSIT command with an error message of the form, "?Can't write that page", give the SET PAGE-ACCESS COPY-ON-WRITE command for the page. Then give DEPOSIT again. If the system allows it, you will be given your own copy of the page to modify.

Using DEPOSIT With Inferior Processes

To modify memory for a process inferior to the one immediately below the TOPS-20 command processor, you must give the FORK command to specify this process before using DEPOSIT. Remember that for an inferior process to run, all superior processes must be running too. INFORMATION PROGRAM-STATUS tells you which processes these are.

Effect on Memory and Terminal

The DEPOSIT command changes one location in memory and leaves your terminal at TOPS-20 command level.

Related Commands

DDT	for calling a debugging program, allowing more efficient modification of memory
EXAMINE	for displaying the contents of a specific memory location

FORK	for selecting the process whose memory you want to modify
INFORMATION MEMORY-USAGE	for displaying a list of memory pages, their contents and status
SET PAGE-ACCESS	for making it possible to write to specified pages

Examples

1. Deposit a value in a memory location.

```
@DEPOSIT 1500 21
@
```

2. Modify a memory location, using symbols. Then examine the location.

```
@DEPOSIT (MEMORY LOCATION) T3+1 (contents) P+2
@EXAMINE (MEMORY LOCATION) T3+1
T3+1/ P+2    (4/ 21)
@
```

3. Try to deposit a number into a page of memory that does not allow it. Examine memory, set the page to Copy-on-Write status, and try again (succeeding this time).

```
@DEPOSIT 716505 0
?Can't write that page
@INFORMATION MEMORY-USAGE

 216. pages, Entry vector loc 462207 len 254000

0-11      Private   R, W, E
20        Private   R, W, E
400-401   Private   R, W, E
402-660   <FIELD-IMAGE>FORTRA.EXE.3    13-271   R, CW, E
700-730   <NEXT-RELEASE>PA1050.EXE.4    1-31    R, E
731-733   Private   R, W, E

@SET PAGE-ACCESS 716 COPY-ON-WRITE
@DEPOSIT 716505 0
 [Shared]
@EXAMINE 716505
716505/  0
@
```

DEPOSIT (Cont.)

4. Check your program status (the arrow (=>) indicates your current process (fork)). Select an inferior process, deposit a value into a memory location, and verify that memory for the superior process is not changed to this.

```
@INFORMATION PROGRAM-STATUS
 Used 0:00:05 in 0:10:11
 TOPS-20: 0:00:03.5
 SET UUO-SIMULATION (FOR PROGRAM)
 SET CONTROL-C-CAPABILITY (OF PROGRAM)
 => Fork 1: HALT at 16176, 0:00:00.3
      Fork 2: HALT at 472052, 0:00:00.1
@FORK 2
@DEPOSIT 3500 12
@EXAMINE 3500
3500/    12
@FORK 1
@EXAMINE 3500
3500/    202200,,1136
@
```

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DETACH

Function

The DETACH command disengages your current job from your terminal.

Format

@DETACH (AND) argument

where

argument — can be one of these:

CONTINUE - directs the current program to proceed, just as if you had typed the CONTINUE command

REENTER - reenters the current program, just as if you had typed the REENTER command

START - starts the current program, just as if you had typed the START command

Defaulting "argument" leaves the program in its present state (usually suspended)

Characteristics

Effects of Detached Jobs

Detached jobs use scarce system resources (e.g., swapping space, process slots, job slots) and can prevent new users from logging in.

Warning

Programs Writing to the Controlling Terminal (Device TTY:)

If a program running in a detached job attempts to write to device TTY:, the job will wait until it is again attached to a terminal.

Effect on Memory, Job, and Terminal

The DETACH command affects your job according to the argument you select, and leaves your terminal disengaged from the system in the state before log-in. It does not affect memory for the detached job.

Related Commands

ATTACH	for joining a detached job to your terminal
SYSTAT	for finding out which jobs are detached
SUBMIT	for running independent jobs
UNATTACH	for disengaging another job from its terminal

Examples

1. Detach your job.

```
@DETACH
 Detaching job # 16
```

2. Detach your job while starting the program in memory, then log in again.

```
@DETACH START
 Detaching job # 45

 SYSTEM 2102 DEVELDPMENT SYSTEM, TDPS-20 Monitor 4(3212)
@LOGIN LATTA 341
 Job 56 on TTY222 26-Dct-79 14:55:03
@
```

3. Log in and put a program in memory; detach the job while starting this program, and repeat the entire procedure. Log in a third time and begin execution of a third program. Interrupt this execution with CTRL/C, then detach this third job while continuing its program. Now you have three jobs running at once. Instead of logging in again, attach the first job (specifying the job number) and verify the system's action.

```
@LDGIN LATTA 341
 Job 5 on TTY230 26-Dct-79 14:38:09

@GET DMN
@DETACH START
 Detaching job # 5

 SYSTEM 2102 DEVELDPMENT SYSTEM, TDPS-20 Monitor 4(3212)
@LDGIN LATTA 341
 Job 22 on TTY222 26-Dct-79 14:42:03

@GET TESTA1
@DETACH START
 Detaching job # 22
```

DETACH (Cont.)

```
 SYSTEM 2102 DEVELOPMENT SYSTEM, TOPS-20 Monitor 4(3212)
@LOGIN LATTA 341
 Job 53 on TTY222 26-Oct-79 14:44:02

@EXECUTE TESTF1
FORTRAN: TESTF1
MAIN.
LINK:   Loading
[LNKXCT   TESTF1 Execution]
^C

@DETACH CONTINUE
 Detaching Job # 53

 SYSTEM 2102 DEVELOPMENT SYSTEM, TOPS-20 Monitor 4(3212)
@ATTACH LATTA
?Job # required - LATTA has more than one detached job
@ATTACH LATTA 5
Password:____

EXIT
@INFORMATION JOB
 Job 5, User LATTA, Account 341, TTY222
@SYSTAT LATTA
   5*    222    EXEC       LATTA
   22    DET    TESTA1     LATTA
   53    DET    TESTF1     LATTA

@
```

DIRECTORY

Function

The DIRECTORY command prints information about the files in a directory.

Format

```
@DIRECTORY (OF FILES) filespec,...,
@@subcommand
@@  .
    .
    .
```

where

filespec — is the specification of a file about which you want information
  Default - *.*.* in your connected directory

,... — means that, after commas, you can give more arguments of the kind already shown

```
@@
@@  .
    .
    .
    .
```

means that, after a final comma, you can give one or more subcommands on successive lines

subcommand — is a keyword, chosen from the list below, indicating your choice of DIRECTORY command options
  Defaults are shown in the list of subcommands

Summary of DIRECTORY Command Subcommands (defaults in boldface)

ACCOUNT
ALPHABETICALLY
ARCHIVED
BEFORE date and/or time

CHECKSUM { **BY-PAGES** | SEQUENTIALLY }

CHRONOLOGICAL { **WRITE** | CREATION | READ | TAPE-WRITE }

CRAM

DIRECTORY (Cont.)

```
DATES        { WRITE
               CREATION
               OFFLINE-EXPIRATION
               ONLINE-EXPIRATION
               READ
               TAPE-WRITE

DELETED
DOUBLESPACE
EVERYTHING
FIND number of generations     Default number - 1
GENERATION-RETENTION-COUNT
HEADING
INVISIBLE
LARGER number of pages
LENGTH
LPT

        ACCOUNT
        CHECKSUM
        CRAM
        DATES
        DOUBLESPACE
        FILE-LINES
        GENERATION-RETENTION-COUNT
        HEADING
NO    { LENGTH
        LPT
        PROTECTION
        REVERSE
        SEPARATE
        SIZE
        SUMMARY-LINES
        TIMES
        USER

OFFLINE
ONLINE
OUTPUT filespec                Default filespec - DIR.DIR
PROHIBIT-MIGRATION
PROTECTION
RESIST-MIGRATION
REVERSE
SEPARATE
SINCE date and/or time
SIZE
SMALLER number of pages

        WRITE
TIMES { CREATION
        OFFLINE-EXPIRATION
        ONLINE-EXPIRATION
        READ
        TAPE-WRITE

USER  { WROTE
        CREATED
```

DIRECTORY Command Subcommands

ACCOUNT

prints the account to which storage fees for the files are charged

ALPHABETICALLY

lists the files in alphabetical order
Default

ARCHIVED

restricts the listing to archived files only, visible and invisible, offline and online

BEFORE date and time or
day of week (or
TODAY) and time

restricts listing to files last written before the date and time given

CHECKSUM { SEQUENTIALLY
BY-PAGES }

computes and prints 6-digit octal checksums for the files, either

sequentially and without going beyond the EOF (end-of-file) mark, or

by pages on disk, accounting for holes in files and pages beyond the EOF mark; output will be followed by letter P in this case.
Default - BY-PAGES

CHRONOLOGICAL { CREATION
WRITE
READ
TAPE-WRITE }

lists files in order (oldest first) according to

- date of creation, or
- date they were last changed, or
- date they were last read, or
- date their tape copy was created,

Default - WRITE

CRAM

compresses formats to reduce printing space and time

DIRECTORY Command Subcommands (Cont.)

DATES { CREATION
WRITE
READ
TAPE-WRITE
OFFLINE-EXPIRATION
ONLINE-EXPIRATION

lists for the specified files, the

- date of creation, or
- date they were last changed, or
- date they were last read, or
- date the tape copy was created, or
- date of expiration

Default - WRITE

DELETED

limits descriptions to deleted files that have not yet been expunged

DOUBLESPACE

double-spaces the DIRECTORY command output

EVERYTHING

prints, in this order, the following information about the files - file specification; protection; account number; size in pages and in bytes (and associated byte size); generation retention count; date and time of creation, of last change (Write), last time read, and of the creation of any tape copy; the name of the user who created the file, and of the user who last wrote in the file.

FIND n

prints the specifications of all but the n most recent generations of the files, omitting any files having n or fewer generations

Default n - 1

GENERATION-RETENTION-COUNT

tells the number of generations of each file the system will retain in the given directory

HEADING

prints a headline labeling each category of information supplied by the command

Default

INVISIBLE

restricts the listing to invisible files only, both on-line and off-line

LARGER n

lists only files of size greater than n pages

LENGTH

gives the file length in bytes and the associated byte size

DIRECTORY Command Subcommands

LPT

directs the command output to LPT: instead of to your terminal

NO
ACCOUNT
CHECKSUM
CRAM
DATES
DOUBLESPACE
FILE-LINES
GENERATION-RETENTION-COUNT
HEADING
LENGTH
LPT
PROTECTION
REVERSE
SEPARATE
SIZE
SUMMARY-LINES
TIMES
USER

suppresses the action or information associated with the specified subcommand. (FILE-LINES refers to the information pertaining to the individual files, which is the bulk of the DIRECTORY command output. SUMMARY-LINES refers to the information following the file lines, giving a total file-count, and total page-count and total checksum if required by subcommands.)
Default - HEADING

OFFLINE

restricts the listing to (visible) off-line files only, both archived and not archived

ONLINE

restricts the listing to on-line files

OUTPUT filespec

directs the command output to the specified file rather than to your terminal
Default filespec - DIR.DIR

PROHIBIT-MIGRATION

restricts the listing to files that are never migrated, because they were specified in a SET FILE PROHIBIT command

PROTECTION

prints the protection code (protection number) of the file

RESIST-MIGRATION

restricts the listing to files that the system considers last for migration. These files were specified in a SET FILE RESIST command.

REVERSE

causes an ordering subcommand, such as ALPHABETICALLY or CHRONOLOGICAL, to arrange its output in reverse

DIRECTORY Command Subcommands (Cont.)

SEPARATE

lists the complete specification for each file on a separate line (instead of listing successive generation numbers of the file on the same line, separated by commas; and instead of listing files of the same name and different type by file type only, indented under the first complete file specification)

SINCE date and time or day of week (or TODAY) and time

limits listing to files last written after the date (or day of week) and time given

SIZE

prints the size of the files in pages

SMALLER n

lists only files of size less than n pages

TIMES
- CREATION
- WRITE
- READ
- TAPE-WRITE
- OFFLINE-EXPIRATION
- ONLINE-EXPIRATION

lists, for the specified files, the

- time and date of creation, or
- time and date they were last changed, or
- time and date they were last read, or
- time and date the tape copy was created, or
- time and date of expiration

Default - WRITE

USER
- CREATED
- WROTE

gives the name of the user who

created the file, or

changed the file last

Default - WRITE

Hints

Listing Unneeded Files

In preparation for deleting files so that your directory will fall within disk quotas, you can get a list of your largest files by using the LARGER and/or SIZE subcommands, and of your oldest or least-used files with DATES, TIMES, and BEFORE. With FIND you can discover extra generations of files.

Finding Files of a Particular Age or Size

To examine only files of a certain age or size, give the pair of subcommands BEFORE and SINCE, or LARGER and SMALLER, with appropriate arguments.

Comparing Checksums of Files

You can use the numbers reported by the CHECKSUM subcommand to compare two files: if they have differing contents they will almost certainly yield different values; and identical files will have the same checksums. The CHECKSUM subcommand causes a checksum of checksums as well.

Special Cases

Asterisks Appearing Before Filespecs

An asterisk (*) appearing before a filename in the response to a DIRECTORY command indicates a possible hardware-related error, one caused by a read operation at a marginally functional area of disk. To test whether there actually is an error in the file, use the COPY command to copy the file to a new specification. If the COPY command succeeds, there is no error in the file, and no asterisk will precede the new file specification. If the COPY command fails, you should move the disk to another drive and repeat the command. If it still fails, you may have to write your own program to recover everything but the missing part of the file (usually, just one page).

DIRECTORY-class Commands for Labeled Magnetic Tapes

The FDIRECTORY, TDIRECTORY, and VDIRECTORY commands for labeled magnetic tapes are equivalent to the DIRECTORY command for labeled magnetic tapes. All these commands rewind the tape set to the beginning of the first volume, print a directory of files, then rewind the set again. You can give only these subcommands when using DIRECTORY-class commands with labeled magnetic tapes: ALPHABETICALLY, DOUBLESPACE, HEADING, LPT, NO, OUTPUT, REVERSE, and SEPARATE.

Effect on Memory and Terminal

The DIRECTORY command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

FDIRECTORY (Full DIRECTORY) TDIRECTORY (Time-ordered DIRECTORY) VDIRECTORY (Verbose DIRECTORY)	other DIRECTORY-class commands for performing related functions

DIRECTORY (Cont.)

Examples

1. Obtain a listing of your files.

```
@DIRECTORY

   PS:<HERRICK>
4-UPED.TXT.13
ACCT20.FOR.1
DUMPER.MAC.1
F-O.DIRECTORY.1
FORD.CTL.2,3,4,5,6
MEMO.CMD.1
  .FIL.1
  .FRM.2
MULTIP.FOR.2

Total of 13 files
@
```

2. Use a DIRECTORY command with the EVERYTHING subcommand to get complete information on the specified file.

```
@DIRECTORY VERCBL.BAT,
@@EVERYTHING
@@

   MISC:<LATTA>
                         PGS Bytes(SZ)   Ret  Creation
Write             Read    Tape-write           Creator   Writer
 VERCBL.BAT.1;P777700;A341  0 0(0)        1    8-Nov-79 11:15:02
8-Nov-79 11:15:02 Never   Never               LATTA     LATTA
@
```

3. Use a DIRECTORY command with a filespec consisting of wildcard characters and the account attribute (;A) to find out which files' storage fees are being charged to account MONITOR.

```
@DIRECTORY *.*;AMONITOR

   PS:<HERRICK>
 FORD.CTL.2
 MEMO.FRM.2

 Total of 2 files
@
```

4. Find out what files of type .TXT there are in your connected directory and in one to which you have group rights.

```
@DIRECTORY *.TXT, <SARTINI>*.TXT

   PS:<HERRICK>
 4-UPED.TXT.13
 MAIL.TXT.1
 REMARK.TXT.4

 Total of 3 files

   PS:<SARTINI>
 CHAP21.TXT.33
 CHAPT2.TXT.16
 CHAPT3.TXT.8
 PRIVATE.TXT.1
 TEST.TXT.1

 Total of 5 files

 Grand total of 8 files
@
```

5. Give a DIRECTORY command with the BEFORE and SINCE subcommands to find out which files were changed during the week of March 6, 1979.

```
@DIRECTORY,
@@BEFORE 3-12-79
@@SINCE 3-5-79
@@

   PS:<HERRICK>
 DIVIDE.FOR.4
 MULTIP.FOR.2
 QUOTNT.EXE.1
 SQUARE.EXE.1

 Total of 4 files
@
```

DISABLE

Function

The DISABLE command suspends any special capabilities, such as those of Wheel or Operator, that the system manager has given you.

Format

```
$DISABLE (CAPABILITIES)
@
```

Characteristics

Resumption of Standard Prompt

The DISABLE command causes the system to resume the standard at sign prompt (@) in place of the dollar sign prompt ($), which indicated enabled capabilities.

Warning

Disabling Promptly

Be sure to disable your capabilities as soon as you have finished using them, so that you or a program you run cannot accidentally damage the system.

Effect on Memory and Terminal

The DISABLE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

ENABLE   for activating any capabilities that the system manager has given you

Examples

1. Disable your capabilities.

```
$DISABLE
@
```

2. Try copying a file from a directory to which you have no access. Then enable your capabilities (assuming you have been granted capabilities), copy the file, and give up your capabilities with the DISABLE command.

```
@COPY <MON-SPCS>FFE.SPC
?Directory access privileges required
@ENABLE
$COPY <MON-SPCS>FFE.SPC
 <MON-SPCS>FFE.SPC.1 => FFE.SPC.2 [OK]
$DISABLE
@
```

DISCARD

Function

The DISCARD command gives up the tape copy of specified on-line files.

Format

```
@DISCARD (TAPE INFORMATION FOR FILES) filespec,...
```

where

filespec — is the specification of a file whose tape copy you want to discard

,... — means that after commas you can give more arguments of the form already shown

Characteristics

Action of DISCARD

The DISCARD command causes the tape pointer in the FDB (File Descriptor Block) of the specified file to be deleted. It does not actually destroy the tape copy of the file. (See also Hints - Undoing DISCARD, below.)

Withdrawing Archive Status of Files

When you give the DISCARD command for an on-line archived file, you withdraw archive status from the disk copy of the file. That is, the file becomes an ordinary disk file, which you can edit or delete if you wish.

DISCARD for Non-archived Files

You can also use the DISCARD command to give up the tape copy of files that have been migrated to tape (automatically, by the system) and then retrieved using the RETRIEVE command.

Hints

Undoing DISCARD

You receive a MAIL message from the operator for every file whose tape copy you discard. The message gives the tape number, save set number, and file number within the saveset of each tape copy. If you have given the DISCARD command for a file and later wish to use the tape copy, you may be able to recover it using this information, as long as the tapes have not yet been recycled.

Effect on Memory and Terminal

The DISCARD command does not affect memory, and leaves your terminal at TOPS-20 command level.

Related Commands

ARCHIVE — for requesting that a permanent tape copy of specified files be made

DELETE (with CONTENTS-ONLY subcommand) — for deleting only the disk copy of files that also have a tape copy

RETRIEVE — for requesting that an off-line file be restored to disk

Examples

1. Discard the tape copy of a file.

```
@DISCARD TESTER.EXE
 TESTER.EXE.1 [OK]
@
```

2. Attempt to alter an archived file. When you find out it has archive status, discard its tape copy (this revokes its archive status) and perform the alteration. Archive the resulting file and check its status.

```
@APPENO FOO.LOG ORCHIVE.TXT
 FOO.LOG.1
?File has archive status, modification is prohibited: ORCHIVE.TXT.1
@DISCARD DRCHIVE.TXT
 DRCHIVE.TXT.1 [DK]
@APPEND FOO.LOG DRCHIVE.TXT
 FDD.LDG.1 [DK]
@
@ARCHIVE DRCHIVE.TXT
 DRCHIVE.TXT.1 [Requested]
@INFDRMATIDN ARCHIVE-STATUS DRCHIVE.TXT
 DRCHIVE.TXT.1 Archive requested
@
```

DISMOUNT

Function

The DISMOUNT command gives up access to the specified structure or tape set.

Format

```
@DISMOUNT medium (NAME) dev:  /switch(es)
```

where

medium — is one of the following:

STRUCTURE - for dismounting file structures (disk packs)

TAPE - for dismounting magnetic tapes

dev: — is either the structure identification (or alias), or a logical name referring to the tape set, e.g., the tape setname specified in your previous MOUNT command, or a logical device name of the form MTn:. It must be of 39 or fewer alphanumeric characters, and must be terminated by a colon.

/switches — are keywords, chosen from the list below, indicating your choice of DISMOUNT command options

DISMOUNT Command Switches
(for use with argument STRUCTURE only)

Switch

/NOWAIT — tells the system to return your terminal to TOPS-20 command level as soon as you give the DISMOUNT command, and to send a message to your terminal when the request has been processed. Otherwise, your terminal waits for the message.

DISMOUNT (Cont.)

DISMOUNT Command Switches (Cont.)

Switch

/REMARK:"remark"

sends the specified remark (of 119 or fewer characters, which must be enclosed in quotation marks (")) to the operator when he is notified of your request. The remark is sent only if you also include the /REMOVE switch.

/REMOVE

tells the operator that you want him to physically dismount the structure from the drive; makes the structure unavailable for further mount requests. See also Hints - Action of DISMOUNT Command Including /REMOVE Switch, below.

/STRUCTURE-ID:structure identification

gives the name of the structure as recorded in the disk(s); used when you give some alias as argument dev:, above. See Hints - Using the /STRUCTURE-ID Switch, below.

Characteristics

Action of DISMOUNT STRUCTURE Command

Ordinary DISMOUNT STRUCTURE

The DISMOUNT STRUCTURE command reduces by 1 the mount count of the specified structure (i.e., the number of users who have given a MOUNT but not a DISMOUNT command for the structure) if you had given a previous MOUNT command for it. An ordinary DISMOUNT STRUCTURE command does not withdraw the structure from system use.

Including /REMOVE Switch

If you include the /REMOVE switch when giving the DISMOUNT STRUCTURE command, the specified structure is made unavailable for further mount requests. The operator is informed of your dismount request, and any further action depends on him. If he denies your request, the structure is again made available to other users; if he grants your request, the structure remains unavailable for further mount requests, and is taken off line and physically removed. Under extreme conditions the operator may take a structure off line and physically remove it even though some users have not dismounted the structure. Before doing so, he will usually send a message to such users to allow them to close their files.

Action of DISMOUNT TAPE Command

The DISMOUNT TAPE command unloads the currently mounted volume of the specified tape set (i.e., rewinds it completely onto its source reel) so that it can be physically removed by the operator, and returns the tape drive to the pool of available resources. (Note that if the /NOUNLOAD switch was given in your original MOUNT command, no volumes are unloaded by the system or removed by the operator, even after your DISMOUNT command is completed.) If a logical name (e.g., the setname of the tape set) is used in the DISMOUNT command to specify the tape set, the system also withdraws the definition of the logical name. Use DISMOUNT TAPE only for tape drives having device names of the form MTn:, i.e., drives obtained using the MOUNT command. Use UNLOAD to unload tapes from drives having device names of the form MTAn:.

Hints

Omitting "medium" Argument

If the dev: argument of your DISMOUNT command will be unambiguous (i.e., you do not have both a structure and a tape set mounted using the same device name), you need not specify the medium. The shortened command, DISMOUNT dev:/switch(es), is sufficient.

Using the /STRUCTURE-ID Switch

The /STRUCTURE-ID switch gives the name of the structure as recorded in the disk(s) of the pack itself, where it is used by the system for identification. You may use this switch to dismount a structure that had been mounted using an alias different from its structure identification. (See Hints - Using the /STRUCTURE-ID Switch, in the MOUNT command description.)

Using INFORMATION VOLUMES before DISMOUNT TAPE

If you give the INFORMATION VOLUMES command before dismounting a tape set, the system will respond with a list of the volids for mounted volumes, including volids for any volumes newly added to the set. You should keep an up-to-date record of these for use with further MOUNT commands.

Effect on Memory and Terminal

The DISMOUNT command does not affect memory, and, if you have included the /NOWAIT switch, leaves your terminal at TOPS-20 command level. If you have not given the /NOWAIT switch, your terminal waits until the system has processed your request, or until you give a CTRL/C to return to TOPS-20 command level. This CTRL/C does not cancel your request.

Related Commands

CANCEL — for withdrawing mount requests before they are processed

INFORMATION AVAILABLE DEVICES
for finding which tape devices (if any) have been assigned to your job

INFORMATION MOUNT-REQUESTS
for finding out information about pending mount requests for structures and tape sets, and currently mounted tape sets

INFORMATION STRUCTURE
for finding out information about the specified mounted structure, including its mount count and the names of users who have given the MOUNT, CONNECT, and ACCESS commands for the structure

INFORMATION VOLUMES
for finding out the volids of all mounted volumes (including newly created volumes) of a tape set

Examples

1. Dismount a magnetic tape set you have been using.

```
@DISMOUNT TAPE MT3:
[Tape dismounted]
@
```

2. Dismount the same tape set, referring to it by its setname.

```
@DISMOUNT TAPE LAT:
[Tape dismounted, logical name LAT: deleted]
@
```

3. Find out the volids of your tape set before dismounting it, in case the tape set has been extended to another volume.

```
@INFORMATION VOLUMES MT3:
Volumes of tape set LAT: LAT,00J16
@DISMOUNT TAPE MT3:
[Tape dismounted]
@
```

4. Find out if you have any mount requests pending or any currently mounted tape sets. Dismount a currently mounted tape set (these display the actual device name (here, MTA0) in the column headed, Status).

```
@INFORMATION MOUNT-REQUESTS/USER

Tape/Disk Mount Queue:
Volume     Status   Type   Write    Req Name   Req#  Job#  User
-------   -------   ----  -------   --------   ----  ----  ------
UNLBLD      MTA0    Tape  Locked    UNLBLD     128    55   LATTA
There is 1 Request in the Queue
@DISMOUNT TAPE UNLBLD:
[Tape dismounted, logical name UNLBLD: deleted]
@
```

5. Dismount a structure you have mounted.

```
@DISMOUNT STRUCTURE SNARK:
Structure SNARK: dismounted
@
```

6. Find out whether you have mounted a specific structure. Then dismount it.

```
@INFORMATION STRUCTURE LANG:
Status of structure LANG:
Mount count: 14, open file count: 8, units in structure: 1
Domestic
Users who have MOUNTed LANG: SCOHEN, REILLY, MILLER, LATTA
Users ACCESSing LANG: SCOHEN, REILLY, MILLER
Users CONNECTed to LANG: SCOHEN, REILLY

@DISMOUNT STRUCTURE LANG:
Structure LANG: dismounted
@
```

7. Find out whether your mount request for a structure has been satisfied yet (it has not). Use the CANCEL command to withdraw this request.

```
@INFORMATION MOUNT-REQUESTS

Tape/Disk Mount Queue:
Volume    Status   Type   Write     Req Name   Req#   Job#   User
-------   -------  ----   -------   --------   ----   ----   ----------
MARK      MTA1     Tape   Enabled   MARK        126     60   HOVSEPIAN
TAPE      MTA3     Tape   Enabled   TAPE        148     13   WALLACE
LATB      Waiting  Disk             LATB        157     65   LATTA
There are 3 Requests in the Queue

@CANCEL MOUNT 157
[1 mount request canceled]
@
```

8. Find out whether you can safely dismount and remove a structure you have mounted. Use the TALK command to ask another user to dismount the structure; then enable your capabilities and give a DISMOUNT command that will physically remove it.

```
@INFORMATION STRUCTURE LATB:
Status of structure LATB:
Mount count: 2, open file count: 0, units in structure: 1
Foreign
Users who have MOUNTed LATB: LATTA, GBLAINE
Users ACCESSing LATB: LATTA, GBLAINE
No users CONNECTed to LATB:
@SYSTAT GBLAINE
  71    127   EXEC     GBLAINE
@TALK GBLAINE

LINK FROM LATTA, TTY 220
@!PLEASE DISMOUNT LATB: AS SOON AS CONVENIENT.   I MUST REMOVE
@!THE STRUCTURE.   THANKS.
@BREAK
@INFORMATION STRUCTURE LATB:
Status of structure LATB:
Mount count: 1, open file count: 0, units in structure: 1
Foreign
Users who have MOUNTed LATB: LATTA
Users ACCESSing LATB: LATTA
No users CONNECTed to LATB:
@END-ACCESS LATB:<OPERATOR>
@ENABLE
$DISMOUNT STRUCTURE LATB: /STRUCTURE-ID:PS:/REMOVE/REM-
ARK:"PLEASE LEAVE LATB: ON RP06 CABINET"
[Mount Request LATB Queued, Request-ID 164]
Structure LATB: removed
$DISABLE
@
```

EDIT [1]

Function

The EDIT commanó lets you change or add to a file in a directory.

Format

@EDIT (FILE) **/switch(es) input filespec** (OUTPUT AS) **output filespec**

where

switches — are keywords, chosen from the list below, indicating your choice of EDIT command options

Defaults are shown in the list of switches

input filespec — is the specification of the file you want to edit

Default - last file specification and associated switches you gave in a CREATE or EDIT command during the current terminal session

output filespec — is the specification with which you want to name the edited file

Default - the input file specification, but with a generation number 1 higher than the highest existing generation number

Summary of EDIT Command Switches (Defaults in boldface)

/BAK
/C128
/C64
/DECIDE
/DPY
/EXPERT
/INCREMENT:n Default n - 100
/ISAVE:n
/LOWER
/M33
/M37
/NOBAK
/NODECIDE
/NONSEPARATORS
/NONUMBER
/NOVICE

[1] This manual assumes that you are using the EDIT program to edit. Refer to the Special Cases section below for information relating to other editors.

/NUMBER	
/OLD	
/OPTION:name	
/PLINES:n	Default n - 16
/R	
/READONLY	
/RONLY	
/RUN:filespec	Default file type - .EXE
/SAVE:n	
/SEPARATORS	
/SEQUENCE	
/START:n	Default n - argument of INCREMENT switch
/STEP:n	Default n - 100
/UNSEQUENCE	
/UPPER	
/WINDOW:n	Default n - 10

EDIT Command Switches

/BAK causes an unedited copy of the file to be saved at the end of an editing session under the specification name.Qyp, where name.typ is the file's original specification
Default

/C128 specifies a 128-character alphabet, allowing insertion of control characters in an alternate format. See the TOPS-20 EDIT Reference Manual for details.

/C64 specifies a 64-character alphabet, disallowing use of an alternate format for insertion of control characters
Default

/DECIDE lets you decide whether to accept or reject each change caused by the operation of the S (substitute) command of the EDIT program

/DPY has no effect in the current monitor

/EXPERT tells the EDIT program that you need only abbreviated error messages, and fewer warnings and reminders

/INCREMENT:n specifies the value that will be added to each line number of the file to obtain the next line number
Default n - 100

/ISAVE:n instructs the EDIT program to update the backup file of specification name.Qyp after every n lines you insert, instead of only at the end of the EDIT session

EDIT Command Switches (Cont.)

/LOWER specifies that all alphabetic characters you type should be considered lowercase characters; give uppercase characters by preceding the corresponding lowercase character with a single quotation mark (').

/M33 has no effect in the current monitor

/M37 has no effect in the current monitor

/NOBAK prevents an unedited copy of the file from being saved at the end of an editing session under specification name.Qyp, where name.typ is the file's original specification

/NODECIDE ensures the automatic operation of the S (substitute) command of the EDIT program

Default

/NONSEPARATORS notifies the EDIT program that the characters . (period), $ (dollar sign), and % (percent sign) are to be regarded as ordinary textual characters and not as field delimiters (separators) in the file being edited

Default

/NONUMBER suppresses the printing of line numbers with each line of a file

/NOVICE tells the EDIT program that you want to see complete error messages and all appropriate warnings and reminders; opposite of /EXPERT switch.

Default

/NUMBER prints a line number for each line of the file

Default

/OLD causes the first backup file to be saved under the specification name.Zyp, where name.typ is the file's original specification

/OPTION:name sets any EDIT switches contained in lines of your SWITCH.INI file labeled with name (of six or fewer characters). The system expects this file to be in your log-in directory.

/PLINES:n specifies how many lines to print in response to each P (print) command of the EDIT program

Default n - 16

/R same as /READONLY

/READONLY prevents any changes to the file during the current session of the EDIT program, that is, makes it a read-only session

/RCNLY same as /READONLY

EDIT Command Switches (Cont.)

/RUN:filespec — specifies the program to be run when you end the current session of the EDIT program with the G command
Default file type - .EXE

/SAVE:n — instructs the EDIT program to update the backup file of specification name.Qyp after every n EDIT program commands that modify the file

/SEPARATORS — notifies the EDIT program that the characters . (period), $ (dollar sign), and % (percent sign) are not ordinary textual characters but are field separators in the accompanying file

/SEQUENCE — tells the EDIT program not to strip the line numbers from the file when the EDIT session ends
Default

/START:n — specifies the first line number for the EDIT program to use when numbering the file
Default n - argument of /INCREMENT switch

/STEP:n — same as /INCREMENT

/UNSEQUENCE — tells the EDIT program to strip the line numbers from the file when the EDIT session ends

/UPPER — specifies that all alphabetic characters you type should be considered uppercase characters; give lowercase characters by preceding the corresponding lowercase character with a single quotation mark (').
Default

/WINDOW:n — specifies the number n (between 10 and 99) of pages to be held in memory during the EDIT session
Default n - 10

Characteristics

Edit Mode or Input Mode

The EDIT command runs the EDIT system program in Edit mode, which uses an asterisk prompt (*). (However, see also Special Cases - Using an Editor Other than EDIT, below.) In Edit mode you can use any EDIT program commands to modify the specified file. If the EDIT program starts by printing the word Input instead of Edit, the specified file does not yet exist. You are then in Input mode, just as if you had used the CREATE command instead of EDIT. See the CREATE command description for details.

Saving Backup Files Periodically

Whenever you use EDIT, be sure to keep an extra copy of the file you are modifying, in case of a system failure. By default the system renames the unedited copy of your file to name.Qyp at the end of an editing session. By using the /SAVE:n switch you can have this backup file updated periodically during the editing session to reflect your edits.

SWITCH.INI File

If there is a group of EDIT command switches that you always or often use with EDIT or CREATE commands, put them into a file of specification SWITCH.INI in your log-in directory, in a line of that file beginning with "EDIT:abc", where abc is any set of characters you choose to identify the line. Then if you include the single switch /OPTION:abc when you give an EDIT or CREATE command, all these switches will be in effect.

Hints

Debugging Your Programs and Editing the Sources

You can use EDIT to modify files containing source programs written in a programming language. The DDT and DEBUG commands run system programs that offer more efficient and powerful techniques for testing temporary corrections to your programs, but you should use the EDIT command to make final changes to the source files.

Further Information

For more information about the EDIT program, see the TOPS-20 EDIT Reference Manual.

Special Cases

Using an Editor Other than EDIT

The CREATE and EDIT command descriptions in this manual assume that these commands call on the EDIT program for their action. If your job uses another editing program (e.g., TV, the editing program designed especially for use with display terminals), the switches and examples shown here will not be applicable. The editing program used by CREATE and EDIT is specified by logical name EDITOR:, so you can find out the name of this program by giving the command, INFORMATION LOGICAL-NAMES EDITOR:. The system-wide definition will be given first, followed by the job-wide definition (if any); the job-wide definition prevails if both exist. If the definition of EDITOR: is SYS:EDIT.EXE, the CREATE and EDIT commands will function as described in this manual. Otherwise, you must consult the appropriate manual (e.g., the TOPS-20 TV Editor Manual) for information.

You can use the DEFINE command to define logical name EDITOR: to be any editing program available at your installation. Then this program will be in effect when you give the CREATE or EDIT command.

Attempting to Edit Archived Files

If you attempt to edit an on-line archived file, the system will let you produce an edited version of the archived file, but will retain the original (archived) file unchanged under the specification name.Qyp (or name.Zyp if you included the /OLD switch in the EDIT command), where name.typ is the file's original specification. See also Hints - Editing Files of Type .Qyp, below.

Editing Files of Type .Qyp

If you edit a file of type .Qyp (i.e., any file whose type begins with the letter Q), the EDIT program does not save the unedited copy as a backup file. In such cases, give the /OLD switch to retain the unedited copy under file type .Zyp. If the file of type .Qyp is an archived file, you will not be allowed to produce an altered version using the EDIT command unless you include the /OLD switch.

Effect on Memory and Terminal

The EDIT command clears memory, then loads the EDIT system program into memory, and leaves your terminal at command level (Edit mode) in that program.

Related Commands

CREATE	for making new files
DIRECTORY-class commands	for getting lists of existing files

Examples

1. Edit a file.

```
@EDIT FILE.FDR
Edit: FILE.FDR.1
*
```

2. Edit a file, requesting that an updated copy of the file be saved after every three EDIT program commands; ask that the first such backup file be saved under specification FILE.ZOR.

```
@EDIT /SAVE:3/OLD FILE.FDR
Edit: FILE.FDR.1
*
```

3. Edit a large text file, adjusting several EDIT program parameters as you begin, and give new specifications for the output file.

```
@EDIT /EXPERT/DECIDE/PLINES:50/WINDDW:99 REMARK.TXT R
EVISIDN.TXT
Edit: REMARK.TXT.18
*
```

4. Create a SWITCH.INI file with one line for the switches used in Example 2, and one line for those in Example 3. Use this file to repeat Example 3.

```
@CREATE SWITCH.INI
Input: SWITCH.INI.1
00100   EDIT:ABC/SAVE:3/OLD
00200   EDIT:DEF/EXPERT/DECIDE/PLINES:50/WINDDW:99
00300   $
*E

[SWITCH.INI.1]
@EDIT /DPTIDN:DEF REMARK.TXT REVISIDN.TXT
Edit: REMARK.TXT.18
*
```

ENABLE

Function

The ENABLE command activates any special capabilities, such as those of Wheel or Operator, that the system manager has given you.

Format

```
@ENABLE (CAPABILITIES)
$
```

Characteristics

Dollar Sign Prompt

The ENABLE command causes the system to print a dollar sign prompt ($), indicating enabled capabilities, in place of the standard at sign prompt (@). The dollar sign prompt is printed after ENABLE even if you have not been granted any capabilities.

Capabilities of Log-In Directory Only

The ENABLE command activates only these capabilities that have been granted to the owner of your log-in directory. You do not receive any capabilities as a result of CONNECT or ACCESS commands or group memberships.

Special Cases

Dollar Sign Prompt in Batch Jobs

Because a dollar sign placed in the location of a TOPS-20 prompt could be confused with a batch command, the system precedes the enabled prompt with a space for batch jobs.

Warning

Disabling Capabilities Promptly

Because your commands are much more powerful if you have capabilities enabled, you should disable them as soon as you have finished using them. Otherwise you or a program that you run could accidentally damage the system.

Effect on Memory and Terminal

The ENABLE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DISABLE — for suspending any capabilities that the system manager has given you

INFORMATION DIRECTORY — for finding out which capabilities, if any, have been granted to the owner of a directory

Examples

1. Enable your capabilities.

```
@ENABLE
$
```

2. Try to assign a plotter to your job before taking it off line for repairs. But it is already assigned to another user, whose terminal is set to refuse links. Enable your capabilities and ask him to deassign the plotter. Then disable capabilities.

```
@ASSIGN PLT2:
?PLT2: Already assigned to job 29
@SYSTAT 29
  29       53   EXEC     R.SCHNEIDER
@TALK R.SCHNEIDER
?Refused, use "MAIL" to send mail to user
@ENABLE
$TALK R.SCHNEIDER

LINK FROM F.DOMINO, TTY 221
$;ROBIN - PLEASE DEASSIGN PLT2:.  IT MUST BE TAKEN OFF LINE
$;FOR MAINTENANCE.  USE PLT3: INSTEAD.  THANKS.
@;OKAY, SURE.
@DEASSIGN PLT2:
@
$BREAK
$DISABLE
@
```

END-ACCESS

Function

The END-ACCESS command terminates your ownership rights to an accessed directory, as well as group rights borrowed from its owner.

Format

```
@END-ACCESS (TO DIRECTORY) dev:<directory>

where

dev:<directory>     is the directory to which you want to end
                    access
                         Default dev: - your connected structure

                         Default <directory> - the directory (on
                                               the specified
                                               structure) of the
                                               same name as your
                                               connected
                                               directory
```

Hints

Implicit END-ACCESS

You can access only one directory at a time on each mounted structure. Each ACCESS command ends access obtained by any previous ACCESS command for a directory on the specified structure. Therefore you do not need to give the END-ACCESS command if you access another directory on the structure, or if the structure is dismounted.

Restoring Previous Rights

END-ACCESS does not restore owner and group rights obtained by a previous ACCESS command for the specified structure. Give another ACCESS command to regain these. (Note that you must access your log-in directory to regain group rights obtained by the LOGIN command, lost by accessing another directory on PS:.)

Effect on Memory and Terminal

The END-ACCESS command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

ACCESS	for obtaining ownership rights to a directory and the group rights of the owner

DISMOUNT for decrementing the mount count of a previously accessed structure

INFORMATION STRUCTURE
for finding out who is accessing a structure

Examples

1. Give up your access rights to another user's directory.

```
@ENO-ACCESS <HOLLANO>
@
```

2. Access another user's directory, copy a file from it, and give up your rights to it. Then give a command that depends on your own group rights. (It fails.) Access your own directory to establish these, and repeat the command, successfully this time.

```
@ACCESS <HOLLANO>
Password:______
@COPY <HOLLANO>OIST.LST
 <HOLLANO>OIST.LST.2 => OIST.LST.2 [OK]
@ENO-ACCESS <HOLLANO>
@INFORMATION OIRECTORY <LATTA.*>,
?No such directory
@ACCESS <LATTA>
@INFORMATION OIRECTORY <LATTA.*>,
@@NAME-ONLY
@@
 Name PS:<LATTA.A>
 Name PS:<LATTA.A.F-O>
@
```

3. Mount a structure, and access a user's directory there. Get a listing of his files of type .TXT. End the access and dismount the structure.

```
@MOUNT STRUCTURE SNARK:
Structure SNARK: mounted
@ACCESS SNARK:<HOLLANO>
Password:_____
@DIRECTORY SNARK:<HOLLAND>*.TXT

   SNARK:<HOLLANO>
 ACCT.TXT.1
 MAIL.TXT.2
 REMARKS.TXT.1
 SYSTEM.TXT.1


 Total of 4 files
@ENO-ACCESS SNARK:<HOLLANO>
@DISMOUNT STRUCTURE SNARK:
Structure SNARK: dismounted
@
```

EOF

Function

The EOF command writes an end-of-file mark on the specified magnetic tape. Use this command for unlabeled tapes only.

Format

```
@EOF (DEVICE) dev:
```

where

dev: is the name of the magnetic tape drive on which you want to write an end-of-file mark

Hints

EOF Seldom Needed

Because tape-writing programs and commands automatically write end-of-file marks in the appropriate places, you do not ordinarily need the EOF command. But it can be useful if such a program is interrupted (by your CTRL/C or by a system failure and restart) and you want to preserve the information already written. Also, you can shorten files on an existing tape by giving an EOF command at the desired point.

Restrictions

EOF With Open Files

If you have given a CTRL/C to exit from a program that has opened a magnetic tape drive and you then give the EOF command for that tape drive, the system will first allow you to close the associated file. You must do so for the EOF command to succeed, but you will probably be unable to continue the program from that point, because the file will now be closed.

Effect on Memory and Terminal

The EOF command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

BACKSPACE REWIND SKIP UNLOAD	other TOPS-20 commands for controlling magnetic tape drives

Examples

1. Put an end-of-file mark (EOF) on your magnetic tape.

```
@EOF MTA0:
@
```

EXAMINE

Function

The EXAMINE command displays the contents of a specific memory location.

Format

```
@EXAMINE (MEMORY LOCATION) octal or symbolic address
```

Output

Contents of Memory Location or Message

When you complete an EXAMINE command, the system prints the memory address examined, followed by a slash (/) and its contents. If you previously used the SET TYPEOUT MODE SYMBOLIC command, this information is both in symbolic and, in parentheses, numeric (octal) format. (The numeric information will always appear for this setting of the command; symbolic information will appear if the system finds that it is different from the numeric.)

Generally the numeric format shows two 6-digit octal numbers separated by a pair of commas (,,). If you do not see this pair of commas, only the right half of the memory location is being displayed; as the left half is 0. However, if you are not permitted to examine this location, the system prints only a message telling you of the restriction.

Hints

Using Symbols

For symbols that are defined in multiple modules of a program, you can be specific by giving the module name followed by an ampersand (&) and the symbol name.

Abbreviating EXAMINE

The EXAMINE command can be abbreviated by the single letter E.

Default Argument for EXAMINE

The argument of your current EXAMINE command defaults to a value greater by 1 than the last address examined, allowing you to inspect a section of memory with only a minimum of typing. But if you gave a more recent DEPOSIT command, the argument of your current EXAMINE command defaults to that address, allowing you to verify the deposit.

Using EXAMINE With Inferior Processes

To examine memory for a process inferior to the one immediately below the TOPS-20 command processor, you must give the FORK command to specify this process before using

EXAMINE. Remember that to run an inferior process after examining it, you must ensure that all superior processes are running too. Give the FORK 1 and CONTINUE commands to let the top-level process continue its inferiors.

Effect on Memory and Terminal

The EXAMINE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DDT	for calling a debugging program, allowing more efficient examination of memory
DEPOSIT	for changing the contents of a specific memory location
FORK	for selecting the process whose memory you want to examine
INFORMATION MEMORY-USAGE	for displaying a list of memory pages, their contents and status

Examples

1. Examine location 550 of the program in memory.

```
@EXAMINE 550
550/     74473,,414155
@
```

2. Examine location 20, first in numeric typeout mode, then in the symbolic mode.

```
@SET TYPEOUT MODE (TO) NUMERIC
@EXAMINE (MEMORY LOCATION) 20
20/ 104000,,56

@SET TYPEOUT MODE (TO) SYMBOLIC
@EXAMINE (MEMORY LOCATION) 20
P+1/ 104000,,.JBBLT+11    (20/ 104000,,56)
@
```

3. Put a program into memory and find out what pages it occupies. Examine a location on page 2, and then (using the abbreviated form of the EXAMINE command) one on page 400.

```
@GET DMN
@INFORMATION MEMORY-USAGE

 5. pages, Entry vector loc 400010 len 254000

0-3       DMN.EXE.1   1-4    R, CW, E
400       DMN.EXE.1   5    R, CW, E

@EXAMINE 2550
2550/    600170
@E 400550
400550/ 0
@
```

EXECUTE

Function

The EXECUTE command loads your program into memory, compiling the source file first if necessary. Then it starts the program.

Format

```
@EXECUTE (FROM) /switch(es) source/switch(es) object,...
```

where

switches — are keywords chosen from the list below, indicating your choice of EXECUTE command options. They have different effects depending on their position in the command line: placed before all files in the command, they act on defaults for all; otherwise they affect only the nearest preceding file.
Defaults are shown in the list of switches

source — is the file specification of the source program. The filename must be of 6 or fewer characters, and the file type of 30 fewer characters; you cannot use a generation number. This argument is not necessary if you supply an object filespec.

object — is the file specification of the object program. The filename must be of six or fewer characters, and the file type must be .REL; you cannot use a generation number. This argument is not necessary if you supply a source.
Default (if you give neither source nor object filespecs) - last filespecs and associated switches you gave in a LOAD-class command

,... — means that, after commas, you can give more arguments (switches, source, and object) of the form already shown

Summary of EXECUTE Command Switches (defaults in boldface)

/68-COBOL
/74-COBOL
/ALGOL
/COBOL
/COMPILE
/CREF
/FORTRAN
/LANGUAGE-SWITCHES:"/switch(es)"
/LIBRARY
/LIST
/MACRO
/MAP

/NOCOMPILE
/NOLIBRARY
/NOLIST
/NOOPTIMIZE
/NOSEARCH
/OPTIMIZE
/RELOCATABLE
/SEARCH
/STAY

Descriptions of these switches are given below. Although the system will not reject switches described under any of the LOAD-class commands, only those switches commonly associated with EXECUTE are described here.

EXECUTE Command Switches

/68-COBOL
compiles the file using the COBOL-68 compiler
Default for files of type .CBL

/74-COBOL
compiles the file using the COBOL-74 compiler

/ALGOL
compiles the file using the ALGOL compiler

/COBOL
compiles the file using the COBOL-68 compiler

/COMPILE
forces compilation of the source file even if a current object file already exists. Use this switch along with a /LIST or /CREF switch to obtain listings when you have current object files.

/CREF
creates a file containing cross-reference information for each compilation. The filename is that of the object file; the file type is .CRF. Use the CREF command to obtain a listing of the file. (For COBOL files this switch automatically produces a cross-reference listing.)

/FORTRAN
compiles the file using the FORTRAN compiler
Default for switches specifying compiler language, in the absence of a standard source file type

/LANGUAGE-SWITCHES:"/switch(es)"
passes the specified switches to the compiler that will process the file(s) to which this switch applies. You must include the switches in double quotation marks (" ").

/LIBRARY
same as /SEARCH

/LIST
prints a line printer listing of the program in ASCII format; the name of this listing is the filename of the object file. The /CREF switch overrides /LIST when they both apply to the same file.

EXECUTE Command Switches (Cont.)

/MACRO
assembles the file using the MACRO assembler

/MAP
produces a loader map and stores it in the file object.MAP, where object is the name of the module containing the start address; or (if no start address) nnnLNK.MAP, where nnn is your job number.

/NOCOMPILE
prevents compilation if the object file is current; otherwise it forces compilation. Use this switch to cancel a /COMPILE or /RELOCATABLE switch.
Default

/NOLIBRARY
same as /NOSEARCH

/NOLIST
prevents a line printer listing of the program
Default

/NOOPTIMIZE
prevents the generation of a globally optimized object file. (For FORTRAN programs only.)
Default

/NOSEARCH
requires all modules in the object file library (the file accompanied by this switch in the command line) to be loaded even if they are not called by your program. Use this switch to cancel a /SEARCH switch.
Default

/OPTIMIZE
generates a globally optimized object file, i.e., one that runs as quickly as possible. (For FORTRAN programs only, and only if you do not also give the /DEBUG switch (see the DEBUG command description).)

/RELOCATABLE
prevents compilation of the source file, forcing use of an existing object file even if the object file is out of date

/SEARCH
requires that the object file library (the file accompanied by this switch in the command line) be searched for modules called by your program or by a program subroutine. Only these modules are loaded, along with modules called from system libraries, which are always searched.

EXECUTE Command Switches (Cont.)

/STAY returns your terminal to TOPS-20 command level so that you can perform other work while the system continues to execute your program. You immediately receive the TOPS-20 prompt (@ or $), and can then issue any user command. But be careful with commands that run programs, because those commands may clear memory and terminate the current process. Also, you could easily send incorrect data to programs expecting terminal input. This switch saves you from having to: issue a ^T to make sure execution has begun; give a ^C to halt the job; and issue a CONTINUE STAY command to remain at command level during execution.

Characteristics

Compiling New Sources Only

Before executing programs, the system ordinarily compiles any source (and only those sources) whose write date is more recent that that of the object file of the same name. You can override this action with the /COMPILE or /RELOCATABLE switch.

Using Standard File Types

If you specify source files with standard types (.FOR, .MAC, .CBL, or .ALG) in an EXECUTE command, the system automatically calls the appropriate compiler when compilation is necessary. If you specify source files by filename only, the system searches your connected directory in the above order for a file of this name and a standard type. To execute programs from sources that have nonstandard file types, give a switch to indicate the proper compiler (/FORTRAN, /MACRO, /COBOL, or /ALGOL). A switch will take precedence over a standard file type if they indicate different languages. If no compiler is indicated with either a switch or a standard file type, the FORTRAN compiler is used.

Hints

Commas Between Filespecs

If you give two or more filespecs separated by commas as arguments to EXECUTE, the loaded programs exist in memory at the same time and will act as a single program. You can use this feature to substitute one module for another under varying conditions or for different applications.

Plus Signs Between Filespecs

If you give two or more filespecs separated by plus signs (+) as arguments to EXECUTE, they are treated as a single file by compilers. Their object module is stored under any filename given as the "object" argument of the command, or (if none) under the last filename in the group and file type .REL.

Indirect Files as Arguments

You can store the arguments (source and object filespecs, switches) of an EXECUTE command in an indirect file, and specify them by typing an at sign (@) and its filespec as an EXECUTE command argument.

Establishing Default Arguments with the SET Command

You can issue the SET DEFAULT COMPILE-SWITCHES command to set up default global arguments to the EXECUTE command. Insert this SET command in your COMAND.CMD file to change your own defaults permanently.

Running LINK Directly

The EXECUTE command automatically runs LINK, the system's loader program, but if you require control of the loading process you can run LINK directly. See the TOPS-20 LINK Reference Manual.

Restrictions

Switches Requiring Compilation

/CREF
/LANGUAGE-SWITCHES
/LIST
/NOLIST
/NOOPTIMIZE
/OPTIMIZE

The above switches will not take effect unless the EXECUTE command causes a new compilation of the relevant source file. See Characteristics - Compiling New Sources Only, above, for more information.

Effect on Memory and Terminal

The EXECUTE command clears memory, loads the appropriate compiler if necessary, then loads and starts your program. It leaves your terminal at program command level (if any) within your program.

Related Commands

COMPILE, LOAD, and DEBUG	other LOAD-class commands for performing related functions
RUN	for running executable programs

Examples

1. Execute a program, indicating the language with a standard file type.

   ```
   @EXECUTE CAFN.FOR
   FORTRAN: CAFN
   LINK:    LOADING
   [LNKXCT CAFN EXECUTION]

   END OF EXECUTION
   CPU TIME: 0.04 ELAPSED TIME: 0.89
   EXIT
   @
   ```

2. Execute a program, indicating the language with a switch. Specify the /STAY switch to return immediately to TOPS-20 command level.

   ```
   @EXECUTE CAFN/FORTRAN/STAY
   @
   ```

3. Execute two programs, requesting a cross-reference file for one of them.

   ```
   @EXECUTE CAFN, TAFN/CREF
   FORTRAN: CAFN
   MAIN.
   FORTRAN: TAFN
   MAIN.
   LINK:    LOADING
   [LNKXCT TAFN EXECUTION]

   END OF EXECUTION
   CPU TIME: 0.04 ELAPSED TIME: 0.15
   EXIT
   @
   ```

4. Combine two source programs into a single object program, and run this program.

   ```
   @EXECUTE CAFN+TAFN
   FORTRAN: CAFN
   MAIN.
   MAIN.
   LINK:    LOADING
   [LNKXCT TAFN EXECUTION]

   END OF EXECUTION
   CPU TIME: 0.04 ELAPSED TIME: 0.16
   EXIT
   @
   ```

5. Execute an ALGOL program, ensuring that the compilation includes required modules only; request a map.

   ```
   @EXECUTE /COMPILE/MAP CALEND/ALGOL, ALGMOD.LBR/SEARCH
   ALGOL: CALEND
   LINK:    LOADING

   EXIT
   @
   ```

EXPUNGE

Function

The EXPUNGE command permanently erases all the deleted files from a directory.

Format

```
@EXPUNGE (DIRECTORY) dev:<directory>,
@@subcommand
@@   .
     .
     .
```

where

dev:<directory> is the name of the directory you wish to expunge; you may use wildcard characters to expunge more than one directory.

Default dev: - your connected structure

Default <directory> - the directory (on the specified structure) of the same name as your connected directory

Default (if no arguments are given) - your connected directory

```
@@
@@ .
   .
   .
```

means that after a final comma you can give one or more (optional) subcommands on successive lines

subcommand is a keyword chosen from the list below, indicating your choice of EXPUNGE command options

EXPUNGE Command Subcommands

DELETE deletes and expunges temporary files, i.e., those with the Temporary (;T) attribute, created by some system programs to hold interim data. Do not use if you will have any further need of these files.

PURGE expunges all files which you have opened but not closed

REBUILD rebuilds the symbol table of the directory named

Output

After a successful EXPUNGE command, the system reports the number of disk pages freed. If the expunged files are small, there may be no pages reported freed. Also, if deleted files are mapped, they will not be expunged, and so will not contribute to the number of pages freed. Occasionally the system will report a negative number. This can mean that files were being written in the directory during the EXPUNGE, or (especially if you include the REBUILD subcommand) that previous computations of directory size had not adequately accounted for some files, e.g., files written near the time of a system crash and reload.

Hints

Using the REBUILD Subcommand

The REBUILD subcommand is not needed under usual conditions, as the system performs this action automatically. Use REBUILD if a message is printed on your terminal advising you to rebuild the symbol table of a directory, or if the "Pages assigned" parameter reported by an INFORMATION DISK-USAGE command shows two page counts (one within parentheses) differing by more than, say, two pages. Note that in this last case REBUILD will merely reduce the difference, not eliminate it, especially if the directory has subdirectories beneath it.

Using the PURGE Subcommand

The PURGE subcommand is useful chiefly for removing the remains of files that were being created at the time of a system crash or a structure dismount. Do not give it while anyone might be using the directory, because that user's program might be deprived of necessary files as a result.

Special Cases

Files With the "Permanent" Attribute

The system erases only the contents of any files that have the Permanent attribute (e.g., MAIL.TXT in your log-in directory) when you try to expunge them. Their file specifications remain among your deleted files, and cannot be removed by TOPS-20 commands.

Effect on Memory and Terminal

The EXPUNGE command does not affect memory and leaves your terminal at TOPS-20 command level.

EXPUNGE (Cont.)

Related Commands

DELETE	for marking files to be later expunged
DIRECTORY-class commands	for obtaining lists of file specifications
INFORMATION DISK-USAGE	for finding out the size of a directory

Examples

1. Expunge all deleted files from your directory.

```
@EXPUNGE
 PS:<LATTA> [6 pages freed]
@
```

2. Find out how much of your disk space is in use and how much is occupied by deleted files. Delete some of your backup files, then give the EXPUNGE command to erase all of these.

```
@INFORMATION DISK-USAGE
 MISC:<LATTA>
 154 Pages assigned, 101 in use, 53 deleted
 590 Working pages, 590 Permanent pages allowed
 33371 Pages free on PS:
@DELETE *.Q*
 BLUE.QAR.1 [OK]
 REMARK.QXT.1 [OK]
 RIMOUSKI.QXT.1 [OK]
@EXPUNGE
 PS:<LATTA> [56 pages freed]
@
```

FDIRECTORY

Function

The FDIRECTORY (Full DIRECTORY) command is equivalent to the DIRECTORY command with the subcommands CRAM, EVERYTHING, and NOHEADING. Use the same format and subcommands with FDIRECTORY as with DIRECTORY. For further information, see the DIRECTORY command description in this manual.

When used with magnetic tapes, the FDIRECTORY command is equivalent to DIRECTORY for magentic tapes.

Examples

1. Get a "Full DIRECTORY" listing, on your terminal, for one of your files.

```
@FDIRECTORY TESTF1.FOR
   MISC:<LATTA>
 TESTF1.FOR.17;P777700;A341    1 162(7) 1 25-Oct-79 11:17:46
25-Oct-79 11:17:46 Never Never LATTA LATTA
@
```

2. Give the FDIRECTORY command for a file, this time requesting the only piece of information about current files not ordinarily supplied by the command. Ask for a heading also.

```
@FDIRECTORY TESTF1.FOR,
@@HEADING
@@CHECKSUM
@@

   MISC:<LATTA>
                          PGS Bytes(SZ)  Ret   Creation
Write               Read    Tape-write   Creator Writer Checksum
 TESTF1.FOR.17;P777700;A341   1 162(7)   1   25-Oct-79 11:17:46
25-Oct-79 11:17:46 Never   Never        LATTA   LATTA 566101P
@
```

FORK

Function

The FORK command specifies the process (fork) of your job to which TOPS-20 commands referencing specific processes apply. It does not, however, create a process.

Format

```
@FORK (IS) number
```

where

number   is the process number, an octal number between 1 and 777

Special Cases

Fork 0

If you are a user with enabled Wheel privileges you can give the command, FORK 0. This references the command processor (EXEC) itself.

Effect on Memory and Terminal

The FORK command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION MEMORY-USAGE	for examining memory of the current process
INFORMATION PROGRAM-STATUS	for finding out the number and status of each process in your job

Examples

1. Make the second process of your job the current process.

```
@FORK 2
@
```

2. Find out which processes exist in your job (an arrow (=>) indicates the current process). Look at memory for the first process, then examine a particular location. Make the second process current, and do the same thing there.

```
@INFORMATION PROGRAM-STATUS
 Used 0:00:00 in 0:00:46
 TOPS-20: 0:00:00.6
 SET UUO-SIMULATION (FOR PROGRAM)
 SET CONTROL-C-CAPABILITY (OF PROGRAM)
 => Fork 1: HALT at 16176, 0:00:00.3
       Fork 2: HALT at 472052, 0:00:00.0
@INFORMATION MEMORY-USAGE

 176. pages, Entry vector loc 2061 len 3

0        PS:<NEXT-RELEASE>BASIC.EXE.2  1    R, CW, E
1        Private   R, W, E
2-66     PS:<NEXT-RELEASE>BASIC.EXE.2  3-67   R, CW, E
70-73    PS:<NEXT-RELEASE>BASIC.EXE.2  70-73   R, CW, E
74       Private    R, W, E
75-103   PS:<NEXT-RELEASE>BASIC.EXE.2  75-103    R, CW, E
317-321  Private    R, W, E
362      Private    R, W, E
370      Fork 2    0    R, W, E
371-372  No page     R, W, E
373-374  Fork 2    3-4    R, W, E
375-437  No page    R, W, E
440-526  PS:<NEXT-RELEASE>BASOTS.EXE.2 1-67    R, CW, E
530-532  Private    R, W, E
533-546  PS:<NEXT-RELEASE>BASOTS.EXE.2 71-104    R, CW, E
600-637  PS:<NEXT-RELEASE>BASOTS.EXE.2 105-144    R, CW, E


@EXAMINE 3500
3500/    202200,,1136
@FORK 2
@INFORMATION MEMORY-USAGE


 108. pages, Entry vector loc 401 len 24

0        Private    R, W, E
3-4      Private    R, W, E
100      Private    R, W, E
436-437  Private    R, W, E
440-526  Fork 1   440-526    R, CW, E
527      No page    R, CW, E
530-532  Private    R, W, E
533-546  Fork 1   533-546    R, CW, E
600-637  Fork 1   600-637    R, CW, E
640-767  No page    R, CW, E


@EXAMINE 3500
3500/    0
@
```

GET

Function

The GET commmand places an executable program into memory, replacing any existing program.

Format

```
@GET filespec/switch
```

where

filespec — is the specification of any file containing an executable program
Default file type - .EXE

/switch — is /USE-SECTION:n
specifies the memory section (from 0 to 37 octal) into which your program is to be loaded. You can use this switch only if your program can be contained in one section.

Effect of Memory and Terminal

The GET command clears memory, puts the specified program into memory, and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION MEMORY-USAGE — for examining the contents of memory

LOAD — for loading a source or object program into memory

MERGE — for putting an executable program into memory without first clearing memory

SAVE — for storing a copy of the program in memory in a file in executable format

START — for starting the program in memory

Examples

1. Put an executable program into memory.

```
@GET TESTF1.EXE
@
```

2. Verify that you have a magnetic tape drive assigned to your job. Get one of your executable programs, save a copy of it on tape, and then start it.

```
@INFORMATION AVAILABLE DEVICES
Devices available to this job:
 DSK, PS, SNARK, MISC, LANG, REL3, DX20, MTA0
 LPT, LPT0, LPT1, CDR, PCDR0, CDP, FE0-15
 PTY23-61, NUL, PLT, PLT0, DCN, SRV
Devices assigned to/opened by this job: MT0, TTY230
@GET TESTF1
@SAVE MT0:
 MT0:TESTF1 Saved
@START

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.03 ELAPSED TIME: 0.72
EXIT
@
```

HELP

Function

The HELP command gives an explanatory text, at your terminal, of many TOPS-20 system features.

Format

```
@HELP name
```

where

name is the name of a system program chosen from the list given in response to the command HELP ?

Default name - HELP

Sample of HELP Command Arguments

ACCT20	ACCTPR	ACTGEN	APL	APLSF	BLIS10	CHECKD	CHKPNT
COBDDT	COBOL	CONV20	CREF	DAEMDB	DBINFO	DBMEND	DIRTST
DLUSER	DUMPER	EDIT	FE	FILCOM	FORDDT	FORDML	FORMAT
FORTRA	HELP	ISAM	LIBARY	LINK	LPTSPL	MACRO	MAIL
MAKLIB	MAKRAM	MAKVFU	OPLEAS	PLEASE	PTYCON	QUEUE	RDMAIL
RERUN	RSXFMT	RUNINP	RUNOFF	SCHEMA	SORT	SYSERR	SYSJOB
TRANSL	ULIST	USAG20	USAH20	WATCH			

Characteristics

Other HELP Command Arguments

Note that some of the HELP command arguments shown here may be omitted if the associated programs are not available at your site. The list may include other texts inserted by your system administrator to describe features special to your system. Also, this list is revised frequently to reflect improvements and additions to standard TOPS-20 programs.

Hints

Printing HELP Files on the Line Printer

The texts displayed by the HELP command are stored in system logical name HLP: under the name of the program and file type .HLP. Use the PRINT command to request your own copy.

Effect on Memory and Terminal

The HELP command does not affect memory and leaves your terminal at TOPS-20 command level.

Examples

1. Ask for information about the FILCOM program, and truncate the output with CTRL/Cs.

```
@HELP FILCOM
FILCOM compares two files in either ASCII mode
or binary depending upon switches or file name extensions.
All standard binary extensions are recognized as binary by
 default.
Switches are :-
/A compare in ASCII mode
/B allow compare of Blank lines
/C ignore Comments and spacing
/S ignore Spacing
/H type this Help text
/#L Lower limit for partial compare
        or number of Lines to be matched
        ( # represents an octal number)
/#U Upper limit for part^C
^C
@
```

2. Use the DIRECTORY command to search system logical name HLP: for any text involving programming language APL. (Note the use of wildcard characters here.) Print copies of one such file for later use.

```
@DIRECTORY HLP:*APL*.HLP


   PS:<HELP>
APL.HLP.2
APLSF.HLP.2


 Total of 2 files
@PRINT /LOWERCASE/COPIES:3/AFTER:17:00 HLP:APLSF.HLP
[Job APLSF Queued, Request-ID 131, Limit 174]
@
```

INFORMATION

Function

The INFORMATION command reports on system and job parameters.

Format

```
@INFORMATION (ABOUT) argument

where

argument     is a keyword, chosen from the list below, indicating
             your choice of INFORMATION command options
```

Summary of INFORMATION Command Arguments (defaults in boldface)

```
ADDRESS-BREAK

ALERTS

ARCHIVE-STATUS filespecs

ARPANET

           { LINES
AVAILABLE  { DEVICES

                { /ALL
BATCH-REQUESTS  { /FAST
                { /PROCESSING-NODE:node name
                { /USER:user name     Default user name - your user
                                                          name

COMMAND-LEVEL
DECNET NODES

           { ALL
           { CARDS
           { COMPILE-SWITCHES
           { PAPER-TAPE
DEFAULTS   { PLOT
           { PRINT
           { SUBMIT
           { TAKE

DIRECTORY dev:<directory>,            Default dev:<directory> - your
  @@VERBOSE                                   connected    directory
  @@FAST
  @@NAME-ONLY

DISK-USAGE dev:<directory>            Default dev:<directory> - your
                                              connected    directory

FILE-STATUS  octal JFN                Default JFN - all JFNs in your
                                                  job

JOB-STATUS
```

```
                 SYSTEM
LOGICAL-NAMES    JOB
                 ALL
                 logical name:

MAIL  user name                    Default user name - your  user
                                                       name

MEMORY-USAGE
MONITOR-STATISTICS

                   /ALL
OUTPUT-REQUESTS    /FAST
                   /USER:user name Default user name - your  user
                                                       name


PROGRAM-STATUS
PSI-STATUS

                      /ALL
RETRIEVAL-REQUESTS    /FAST
                      /USER:user name Default user name - your user
                                                          name

SPOOLED-OUTPUT-ACTION
STRUCTURE dev:                     Default dev: - your connected
                                                  structure

SUBSYSTEM-STATISTICS
SYSTEM-STATUS
TAPE-PARAMETERS
TERMINAL-MODE number               Default number - your terminal
                                                    line number

VERSION
VOLUMES
```

INFORMATION Command Arguments

ADDRESS-BREAK — gives the location (in numeric or symbolic format - depending upon previous specification of the SET TYPEOUT MODE command) and mode of any address breaks for the program currently in memory. Set with SET ADDRESS-BREAK.

ALERTS — lists the dates and times that the system is to signal you at the terminal. The last line of the display indicates whether alerts are to be sent unconditionally to your terminal (depending upon previous specification of the SET AUTOMATIC command). Set with SET ALERT.

ARCHIVE-STATUS filespecs — prints the archive status of all specified files for which archival has been requested or for which migration has been prohibited

Default filespec - *.*.* in your connected directory

INFORMATION Command Arguments (Cont.)

ARPANET

gives this information about the ARPANET network, if the system is a member:

- whether the network service is enabled
- whether the IMP (Interface Message Processor) is up, or down, or initializing
- date and time of the last ready line on-transition (if any) between the monitor and the IMP
- date and time of the last ready line off-transition (if any) between the monitor and the IMP

AVAILABLE { LINES
DEVICES }

lists the devices or terminal lines available to you or already assigned to your job. Use ASSIGN to obtain devices (use MOUNT for structures).

Default - DEVICES

BATCH-REQUESTS { /ALL
/FAST
/PROCESSING-NODE:node name::
/USER:user name }

lists the jobs being processed and waiting to be processed by the batch system. The list includes:

- the jobname and request ID number of the request (an asterisk (*) appears before the jobname if the job is currently being processed)
- the scheduled run time of the request
- the name of the user who initiated the request
- the values of the switches /AFTER and /DEPENDENCY-COUNT, if values were given in the original SUBMIT or subsequent MODIFY command

Use SUBMIT, MODIFY, or CANCEL to change this list.

The /ALL switch adds the switches /ASSISTANCE, /PRIORITY, /RESTARTABLE, /SEQUENCE, and /UNIQUE to this list, while /FAST eliminates the display of all switches and column headings; /PROCESSING-NODE specifies the DECnet network node about whose batch jobs you want information; /USER restricts descriptions to jobs of the user named, and can be given with any of the other three switches.

Default user name - your user name

INFORMATION Command Arguments (Cont.)

COMMAND-LEVEL

prints the status of the LATE-CLEAR-TYPEAHEAD parameter, which prevents you from giving another TOPS-20 command until any error message resulting from a previous command has been printed. Set with SET LATE-CLEAR-TYPEAHEAD.

DECNET NODES

displays the DECnet network nodes accessible to your system. The first line provides your local node name. Check your current node with INFORMATION JOB-STATUS.

DEFAULTS { ALL
CARDS
COMPILE-SWITCHES
PAPER-TAPE
PLOT
PRINT
SUBMIT
TAKE }

displays, in a format suitable for entering them, default arguments established at the current level of TOPS-20 for the specified command. CARDS and PAPER-TAPE refer to the PUNCH CARDS and PUNCH PAPER-TAPE commands, respectively; COMPILE-SWITCHES refers to LOAD-class commands. The ALL argument displays the defaults for all these categories. Set with SET DEFAULT.

Default - ALL

DIRECTORY dev:<directory>,

@@FAST
@@VERBOSE
@@NAME-ONLY

lists the current parameter values set for the indicated directory by the SET DIRECTORY or BUILD commands, or by default. The subcommands call for either a short list of non-default (i.e., user-determined) values only (FAST), or a complete list including defaults (VERBOSE), or a listing of directory names only (NAME-ONLY). If you use NAME-ONLY, specify a directory in the form <directory.*>, <*directory*>, or <*>. The categories of information include:

- the directory's password (shown only to privileged users or to owner of superior directory)
- working and permanent storage limits
- capabilities (assigned or withheld)
- whether you can establish DECNET or ARPANET network connections
- whether expired files should be automatically archived
- directory number
- default file protection

INFORMATION Command Arguments (Cont.)

- default account
- directory protection
- default number of generations maintained for files
- maximum number of subdirectories allowed
- date and time of last log-in
- off-line and on-line expiration defaults
- group memberships
- user group numbers assignable to subdirectories

Set with SET DIRECTORY or (for subdirectories) BUILD.

Default dev:<directory> - your connected directory

DISK-USAGE dev:<directory>

prints, for the indicated directory

- the number of pages of assigned disk storage, and the number of deleted pages, if any
- working and permanent page limits
- total number of unused pages on the file structure containing the directory

Default dev:<directory> - your connected directory

You can use percent signs and asterisks in the <directory> field (for example, <%directory*>, <directory.*>, or <*>) to get information about all matching directories or subdirectories.

FILE-STATUS octal JFN

gives, for the specified JFN (an internal number identifying each file opening)

- the associated file specification
- the mode of access (Append, Execute, Read, or Write) for which the JFN is open (or was opened last, if NOT OPENED precedes the access mode)
- special access conditions, namely DATA ERROR if an error is made in accessing the file, or EOF if the file pointer is at the end of the file
- if appropriate, byte pointer and byte size, which tell the number of bytes transferred to or from the file, and

- a list of devices currently assigned to or opened by this job

But if a file has been opened by another process for its sole use, you see only the message, "Restricted JFN".

Default JFN - all JFNs for your job

JOB-STATUS

prints your

- job number
- user name
- connected directory (if not your log-in directory)
- account; session remark (if any)
- terminal number
- network node (if not your host node (log-in node))

You can set some of these parameters with CONNECT, SET ACCOUNT, SET LOCATION, and SET SESSION-REMARK.

LOGICAL-NAMES { ALL
JOB
SYSTEM
logical name: }

prints the logical names and definitions which have been established for your job, for the system, or for both; or prints the job-wide and system-wide definitions of the specified logical name. Establish and withdraw logical names with DEFINE.

Default - JOB

MAIL user name

tells whether there is unread mail for the user if you have read access to it; otherwise you see only the message, "Mailbox protected". Send mail with the MAIL program, and read mail with the RDMAIL program.

Default user name - your user name

MEMORY-USAGE

prints, for the current process of your job

- the number of pages of memory assigned
- location (in numeric or symbolic format - depending upon previous specification of the SET TYPEOUT MODE command) and length of the current program's entry vector (set with SET ENTRY-VECTOR)

and on each succeeding line

INFORMATION Command Arguments (Cont.)

- the page numbers of pages occupied by a file or program
- the file specification if the pages are file pages; the process specification if the pages are mapped from another process; PRIVATE otherwise.
- the page numbers of file pages or process pages. If a page is mapped by indirect pointers, the file specification is printed to which it is mapped; "Fork n" means that these pages are mapped indirectly through another process (process n) of the job; "No page" can mean either of these conditions, when the destination page does not yet exist.
- the permitted accesses to the pages (set with SET PAGE-ACCESS):

  R - Read access

  W - Write access

  CW - Copy-on-Write access

  E - Execute access

Refer to Example 4 at the end of this command description for obtaining information on pages assigned to extended sections of memory.

MONITOR-STATISTICS gives you

- the length of time (in hours, minutes, and seconds) since the monitor was reloaded
- an analysis of monitor overhead time, by percentages
- the number of swap-reads and -writes, and file-reads and -writes
- the number of pages of memory available to user programs
- the number of terminal wake-ups (occasions when a program "wakes up" after waiting for terminal input or output to finish), and of terminal interrupts (occasions when a program is interrupted by a CTRL/C, CTRL/O, or CTRL/T (or other, user-enabled control characters) typed at a user's terminal)

INFORMATION Command Arguments (Cont.)

- the average number of processes in the balance set (NBAL, a subset of the run set - these are runnable, and each receives a share of total CPU time) and in the remainder of the run set (NRUN - these are waiting to be run),
- the number of seconds of CPU time given to each of the four scheduler queues (where the leftmost listing describes the highest priority queue, for interactive processes, and the rightmost listing is for CPU-bound processes), and
- the allotted share and actual use of the system (expressed as a percentage of total CPU time) by each class, and the 1-, 5-, and 15-minute load averages of each class

All averages and totals are computed for the time since system start-up.

```
              ⎧ /ALL
MOUNT-REQUESTS⎨ /FAST
              ⎩ /USER:user name
```

prints a list, at your terminal, of pending structure-mount and tape-mount requests, and of tape-mount requests currently being satisfied. The list includes

- the volid of each volume of tape that will be mounted, or the structure identification of each disk pack that will be mounted
- the status of each volume of tape (either the number of the tape drive, in the form, MTAn, on which it is mounted, or Waiting)
- the type of request (either Disk or Tape)
- the mode (either Enabled, if the /WRITE-ENABLED switch was specified or assumed in the original MOUNT TAPE command, or Locked if /READ-ONLY applies) in which each volume of tape is to be mounted

INFORMATION Command Arguments (Cont.)

- the request name (setname) of each tape-mount request, or the alias of each structure-mount request
- the request number (i.e., request ID number) of each request
- the number of the job that made the request
- the user name of the owner of the job that made the request

Use the MOUNT, CANCEL (for pending requests), and DISMOUNT (for satisfied requests) commands to change this list.

The /ALL switch adds the /REMARK switch and its argument, if specified in the original MOUNT command, and includes the first four items above, for tape volumes other than the currently mounted volume or the first volume specified (in MOUNT commands that specify multiple volumes). The /FAST switch eliminates column headings and the sum of the number of requests; /USER restricts descriptions to jobs of the user named, and can be given with either of the other two switches.

Default user name - your user name

OUTPUT-REQUESTS { /ALL
/FAST
/USER:user name

prints a listing, at your terminal, of the requests being sent or waiting to be sent to an output device. The list includes

- the name of the queue (card punch, paper tape punch, plotter, or line printer)
- the jobname and request ID number of the request (an asterisk (*) appears before the jobname if the request is currently being processed)
- the output limit, in appropriate units (number of pages, minutes of plotter time, feet of paper tape, or number of cards)
- the name of the user who initiated the request, and
- values of the switches /AFTER, /FORMS, and /UNIT, if given non-default values in the original PRINT, PLOT, PUNCH, or subsequent MODIFY command

Use PRINT, PLOT, PUNCH, MODIFY, or CANCEL to change this list.

INFORMATION Command Arguments (Cont.)

The /ALL switch adds the /NOTE and /SEQUENCE switches to this list, while the /FAST switch eliminates the display of all switches and column headings; /USER restricts descriptions to jobs of the user named, and can be given with either of the other two switches.

Default user name - your user name

PROGRAM-STATUS

gives the following information for the current level of the TOPS-20 command processor (EXEC):

- the amount of CPU time you have used, and total elapsed time since you logged in
- the amount of TOPS-20 command processor time used
- SET UUO-SIMULATION (set with SET UUO-SIMULATION) if the TOPS-10 compatibility package is enabled to simulate TOPS-10 monitor calls issued by a program you are running
- SET CONTROL-C-CAPABILITY (set with SET CONTROL-C-CAPABILITY) if your program is allowed to handle CTRL/C interrupts itself
- the settings established with the SET TRAP and SET TYPEOUT commands
- a summary of the status of each process belonging to the current copy of the TOPS-20 command processor, including total CPU time used so far

An arrow (=>) indicates your current process.

PSI-STATUS

tells you:

- whether the PSI (programmed-software-interrupt) system is in use (ON) or not (OFF)
- the memory address of the level table and of the channel table - 0 if none was set
- the numbers of the priority levels for which there are interrupts in progress (1 and/or 2 and/or 3), where 1 is the highest priority
- the numbers of channels enabled (ready) to accept interrupts, and of channels with pending interrupts

For further discussion of the interrupt system see the TOPS-20 Monitor Calls Reference Manual.

INFORMATION Command Arguments (Cont.)

```
RETRIEVAL-REQUESTS { /ALL
                   { /FAST
                   { /USER:user name
```

prints a list, at your terminal, of pending retrieval requests. Each file for which you request retrieval constitutes a separate request, even if specified within a single RETRIEVE command. The list includes:

- the name of the request (the first six characters of the filename)
- the request ID number
- the volids of each tape containing the file
- the name of the user who made the request

The /ALL switch includes the complete specification (up to 49 characters of the file, while the /FAST switch eliminates column headings; /USER restricts descriptions to requests of the user named and can be used with either of the other two switches.

Default user name - your user name

SPOOLED-OUTPUT-ACTION

tells you whether the system processes your spooled output requests immediately, or defers them until you log out. Set with SET SPOOLED-OUTPUT-ACTION. You make spooled output requests not with the PLOT, PRINT, or PUNCH command (these are always processed immediately), but with a command or program that writes files to a spooled output device (for example, a line printer - LPT:, plotter - PLT:, or card punch - CDP:). The COPY command, the /LIST switch for LOAD-class commands, and the LPT and OUTPUT subcommands for DIRECTORY-class and SYSTAT commands make spooled output requests.

INFORMATION Command Arguments (Cont.)

STRUCTURE dev:

gives, for each structure named:

- information as to whether the system performs checking operations while writing to the data or swapping areas of the structure. The system would perform this checking by immediately reading the data that it has just written. If the system manager has enabled these functions, the following lines appear at the top of the display: "Write verification for data", and "Write verification for swapping".

- the number of users who have mounted the structure, the number of open files on the structure, and the number of disks in the structure
- kind of structure - Public or Private, Domestic or Foreign (see the TOPS-20 User's Guide)
- names of users who have mounted the structure
- names of users who have accessed the structure
- names of users who have connected to the structure

Use an asterisk (*) for dev: to specify all mounted structures. Mount and dismount structures with the MOUNT and DISMOUNT commands.

Default dev: - your connected structure

SUBSYSTEM-STATISTICS

gives, for each subsystem (any name specified by the SETSN JSYS), the following information:

- its name and total runtime since the system last started - SNAMES, STIMES
- the average number of page faults per second it has caused - SPFLTS
- the number of long-term waits it has caused - SNBLKS
- its average working-set size (the number of pages it occupies in memory) - SSIZE
- the number of times a SETSN JSYS has been executed for it (excluding the EXEC subsystem)

See the TOPS-20 Monitor Calls Reference Manual for more information.

INFORMATION Command Arguments (Cont.)

SYSTEM-STATUS

tells you:

- whether the operator is present
- what kinds of log-ins are allowed - local, remote, pseudo-terminal, network, or console
- whether accounting (assessing and recording charges for system use) is being done
- whether account validation (checking accounts against lists of authorized users) is enabled
- whether working set preloading is enabled (Working set preloading is discussed in the System Manager's Guide and in the Software Installation Guide.)
- whether tape-drive allocation (automatic assignment of tape drives) is enabled
- whether automatic file retrieval-waits (the delaying of a command's execution until specified off-line files are (automatically) retrieved) are enabled
- the system's expiration default date for off-line files
- the current setting of the scheduler bias control
- whether class scheduling is enabled, and, if it is enabled, the special class (if any) for batch jobs, and the default class (if any)

TAPE-PARAMETERS

gives the default settings of these parameters for magnetic tapes:

- tape density, in bits per inch
- tape parity (ODD or EVEN)
- format (ANSI-ASCII, CORE-DUMP, INDUSTRY-COMPATIBLE, or SYSTEM-DEFAULT), and
- tape record length, in bytes

Set with SET TAPE.

TERMINAL-MODE number

gives the following information about the specified terminal:

- its type (for example, LA36, VT52, or SYSTEM-DEFAULT)
- its speed (baud rate), in bits per second
- whether it is set to receive or refuse links, advice, and system messages

INFORMATION Command Arguments

- whether it is set to pause in printing output when you type the pause character, and/or at the end of each full page of output
- the pause and continue characters that you may have set with the TERMINAL PAUSE CHARACTER command (only if TERMINAL PAUSE END-OF-PAGE and TERMINAL PAUSE COMMAND are in effect, and if CTRL/S and CTRL/Q were not the specified characters)
- the length (in number of lines) and width (in number of characters) of its page
- whether it is capable of printing lowercase characters, whether it is set to raise lowercase letters you type to uppercase, and whether it will mark (flag) capital letters with a single quotation mark (')
- whether it has a formfeed mechanism, and whether it is set to only indicate formfeeds or to perform them
- whether it has mechanical tab stops, whether it is set to immediately echo input you type
- whether it is operating in FULLDUPLEX or HALFDUPLEX mode

Set with TERMINAL. The SYSTAT command displays terminal numbers.

VERSION

tells you:

- the TOPS-20 operating system's name and version number
- the version of the TOPS-20 command processor in use
- the names (and versions, if any) of all programs currently in memory for which program data vectors (PDVs) exist and that are associated with the current process. (Refer to the Monitor Calls Reference Manual and to the description of the /PVBLOCK switch in the LINK Reference Manual for information on PDVs.) See Example 5.
- the version of the UUO simulation package in use (if a TOPS-10 program is in memory)

The format of a version number is:

```
a.b(c)-d
```

INFORMATION Command Arguments (cont.)

where: (1) a and b are respectively incremented for major and minor changes in the software (2) c gives a rough indication of the number of times the software component has been edited (3) d, a holdover from earlier versions of TOPs-20 and is now rarely used, identifies the programmer(s), responsible for the software component.

VOLUMES setname: gives the volids of currently mounted and newly created volumes in the specified tape set

Hints

Specifying the Correct Process of TOPS-20

Use the FORK command to specify the process to be described by the ADDRESS-BREAK, FILE-STATUS, and MEMORY-USAGE arguments. Find out your current process with INFORMATION PROGRAM-STATUS.

Effect on Memory and Terminal

The INFORMATION command does not affect memory and leaves your terminal at TOPS-20 command level.

Examples

1. Use an INFORMATION command to determine your current terminal settings.

```
@INFORMATION TERMINAL-MODE
 TERMINAL LA36
 TERMINAL SPEED 300
 REFUSE LINKS
 REFUSE ADVICE
 RECEIVE SYSTEM-MESSAGES
 TERMINAL PAUSE (ON) COMMAND
 TERMINAL PAUSE (ON) END-OF-PAGE
 TERMINAL PAUSE (ON) CHARACTER SPACE
 TERMINAL LENGTH 66
 TERMINAL WIDTH 80
 TERMINAL LOWERCASE
 TERMINAL RAISE
 TERMINAL NO FLAG
 TERMINAL INDICATE
 TERMINAL NO FORMFEED
```

```
  TERMINAL NO TABS
  TERMINAL NO IMMEDIATE
  TERMINAL FULLDUPLEX
 @
```

2. Mount a structure and access your directory on the structure. Compare the disk space available in this directory and in your connected directory. (Note that there are many more pages free on your connected structure (MISC:) as a whole than on structure SNARK:; this is likely to make your use of the system more efficient if you work only within MISC:.)

```
@MOUNT STRUCTURE SNARK:
Structure SNARK: mounted
@ACCESS SNARK:
@INFORMATION DISK-USAGE SNARK:
 SNARK:<LATTA>
 198 Pages assigned
 400 Working pages, 400 Permanent pages allowed
 2836 Pages free on SNARK:
@INFORMATION DISK-USAGE
 MISC:<LATTA>
 119 Pages assigned
 590 Working pages, 590 Permanent pages allowed
 33172 Pages free on MISC:
@
```

3. Print a file, ordering several copies and supplying a note to be attached to it. Use an INFORMATION command to verify that your request is in the output queue. Modify the date on which the job will be printed, and use the INFORMATION command again to confirm this action.

```
@PRINT TESTF1.FOR /AFTER:17:00/COPIES:20/FORMS:NARROW/NO-
TE:"T-TH LAB"
[Job TESTF1 Queued, Request-ID 219, Limit 54]
@INFORMATION OUTPUT-REQUESTS /ALL/USER

Printer Queue:
Job Name   Req#   Limit   User
--------   ----   -----   ------
  TESTF1    219      54   LATTA                    /Forms:NARROW
         /After: 8-Nov-79 17:00   /Note:T-TH LAB   /Seq:1791
There is 1 Job in the Queue (None in Progress)


@MODIFY PRINT 219 /AFTER:15-NOV-79 17:00
[1 Job Modified]
@INFORMATION OUTPUT-REQUESTS /ALL/USER

Printer Queue:
Job Name   Req#   Limit   User
--------   ----   -----   ------
  TESTF1    219      54   LATTA                    /Forms:NARROW
         /After:15-Nov-79 17:00    /Note:T-TH LAB   /Seq:1791
There is 1 Job in the Queue (None in Progress)

@
```

INFORMATION (Cont.)

4. Place a program in memory section 17. Then give the INFORMATION MEMORY-USAGE command to verify that the program was appropriately placed. The page numbers, beginning at 17000, indicate that section 17 is in use, because a section comprises 1000 (octal) pages. Also, the left half of the entry vector location contains 17.

```
@GET TEST.EXE.1 /USE-SECTION:17
@INFORMATION (ABOUT) MEMORY-USAGE

2. pages, Entry vector loc 17000162 len 254000

17000-17001        TEST.EXE.1   1-2    R, CW, E
@
```

5. Issue the INFORMATION VERSION command for information on programs in your memory area that have program data vectors associated with them. Note that the merging of such programs yields consolidated information.

```
@GET IOLIB
@INFORMATION VERSION
 2102 TOPS-20 Development System, TOPS-20 Monitor 5(4204)
 TOPS-20 Command processor 6(717)
 Program is IOLIB
PDVs:     Program name IOPAK, version 1.1(420)
@
@GET MATHLB
@INFORMATION VERSION
 2102 TOPS-20 Development System, TOPS-20 Monitor 5(4204)
 TOPS-20 Command processor 6(717)
 Program is MATHLB
PDVs:     Program name MATHLB, version 3.33(360)
@
@MERGE IOLIB
@INFORMATION VERSION
 2102 TOPS-20 Development System, TOPS-20 Monitor 5(4204)
 TOPS-20 Command processor 6(717)
 Program is MATHLB
PDVs:     Program name MATHLB, version 3.33(360)
  Program name IOPAK, version 1.1(420)
@
@MERGE RPTGEN
@INFORMATION VERSION
 2102 TOPS-20 Development System, TOPS-20 Monitor 5(4204)
 TOPS-20 Command processor 6(717)
 Program is MATHLB
PDVs:     Program name REPORT, version 3.1(156)
  Program name MATHLB, version 3.33(360)
  Program name IOPAK, version 1.1(420)
@
```

LOAD

Function

The LOAD command loads your program into memory, compiling the source file first if necessary.

Format

```
@LOAD (FROM) /switch(es) source/switch(es) object,...
```

switches — are keywords chosen from the list below, indicating your choice of LOAD command options. They have different effects depending on their position in the command line: placed before all files in the command, they act as defaults for all; otherwise they affect only the nearest preceding file.

Defaults are shown in the list of switches

source — is the file specification of the source program. The filename must be of 6 or fewer characters, and the file type of 3 or fewer characters; you cannot use a generation number. This argument is not necessary if you supply an object filespec.

object — is the file specification of the object program. The filename must be of 6 or fewer characters, and the file type must be .REL; you cannot use a generation number. This argument is not necessary if you supply a source filespec.

Default (if you give neither source nor object filespecs) - last filespecs and associated switches you gave in a LOAD-class command

,... — means that, after a comma, you can give more arguments (source, switches, and object) of the form already shown

Summary of LOAD Command Switches (defaults in boldface)

/68-COBOL
/74-COBOL
/ALGOL
/COBOL
/COMPILE
/CREF
/DDT
/DEBUG
/FORTRAN
/LANGUAGE-SWITCHES:"/switch(es)"
/LIBRARY
/LIST
/MACRO
/MAP

LOAD (Cont.)

/NOCOMPILE
/NODEBUG
/NOLIBRARY
/NOLIST
/NOOPTIMIZE
/NOSEARCH
/NOSYMBOLS
/OPTIMIZE
/RELOCATABLE
/SEARCH
/STAY
/SYMBOLS

Descriptions of these switches are given below. Although the system accepts switches described under any of the LOAD-class commands, only those switches commonly associated with LOAD are described here.

LOAD Command Switches

/68-COBOL
compiles the file using the COBOL-68 compiler
Default for files of type .CBL

/74-COBOL
compiles the file using the COBOL-74 compiler

/ALGOL
compiles the file using the ALGOL compiler

/COBOL
compiles the file using the COBOL-68 compiler

/COMPILE
forces compilation of the source file even if a current object file already exists. Use this switch along with a /LIST or /CREF switch to obtain listings when you have current object files.

/CREF
creates a file containing cross-reference information for each compilation. The filename is that of the object file; the file type is .CRF. Use the CREF command to obtain a listing of the file. (For COBOL files, the switch automatically produces a cross-reference listing.) See the TOPS-20 User Utilities Guide for more information about the CREF program.

/DDT
loads the DDT debugging program along with your object file

/DEBUG
produces an object file containing debugging information beyond that usually provided during a compilation (for use with FORTRAN programs only, and only if you have not given the /OPTIMIZE switch)

LOAD Command Switches (Cont.)

/FORTRAN compiles the file using the FORTRAN compiler
Default for switches specifying compiler language, in the absence of a standard source file type

/LANGUAGE-SWITCHES:"/switch(es)"
passes the specified switches to the compiler that will process the file(s) to which the switch applies. You must include the switches in double quotation marks (" ").

/LIBRARY same as /SEARCH

/LIST prints a line printer listing of the program in ASCII format. The name of this listing is the filename of the object file. The /CREF switch overrides /LIST when they both apply to the same file.

/MACRO assembles the file using the MACRO assembler

/MAP produces a loader map and stores it in the file object.MAP, where object is the name of the module containing the start address; or (if no start address) nnnLNK.MAP, where nnn is your job number

/NOCOMPILE prevents compilation if the associated object file is current; otherwise it forces compilation. The switch is useful chiefly in canceling a /COMPILE or /RELOCATABLE switch.
Default

/NODEBUG excludes special debugging information from your object file
Default

/NOLIBRARY same as /NOSEARCH

/NOLIST prevents a line printer listing of the program
Default

/NOOPTIMIZE prevents the generation of a globally optimized object file (for FORTRAN programs only)
Default

/NOSEARCH requires all modules in the object file library (the file accompanied by this switch in the command line) to be loaded even if they are not called by your program. Use this switch to cancel a /SEARCH switch.
Default

LOAD Command Switches (Cont.)

/NOSYMBOLS — prevents a symbol table from being loaded along with the object file

/OPTIMIZE — calls for generation of a globally optimized object file, that is, one that runs as quickly as possible (for FORTRAN programs only, and only if you do not also give the /DEBUG switch)

/RELOCATABLE — prevents compilation of the source file, forcing use of an existing object file even if the object file is out of date

/SEARCH — requires that the object file library (the file accompanied by this switch in the command line) be searched for modules called by your program or by a program subroutine. Only these modules are loaded, along with modules called from the system libraries, which are always searched.

/STAY — returns your terminal to TOPS-20 command level so that you can perform other work while the system continues to load your program. You immediately receive the TOPS-20 prompt (@ or $), and can then issue any user command. But be careful with commands that run programs, because those commands may clear memory and terminate the current process. Also, you could easily send incorrect data to programs expecting terminal input. This switch saves you from having to: issue a ^T to make sure loading has begun; give a ^C to halt the job; and issue a CONTINUE STAY command to remain at command level during loading.

/SYMBOLS — loads a symbol table along with the object file; helpful for debugging a program

Default

Characteristics

Compiling New Sources Only

Before loading programs, the system ordinarily compiles any specified source (and only those sources) whose write date is more recent than that of the object file of the same name. You can override this action with the /COMPILE or /RELOCATABLE switch.

Using Standard File Types

If you specify source files with standard types (.FOR, .MAC, .CBL, or .ALG) in a LOAD command, the system automatically calls the appropriate compiler when compilation is necessary. If you specify source files by filename only, the system searches your connected directory for a file of this name and a standard type. To load programs from sources that have nonstandard file types, give a switch to indicate the proper compiler (/FORTRAN, /MACRO, /COBOL, or /ALGOL). A switch will take precedence over a standard file type if they indicate different languages. If no compiler is indicated with either a switch or a standard file type, the FORTRAN compiler is used.

Hints

Commas Between Filespecs

If you give two or more filespecs separated by commas as arguments to LOAD, the loaded programs exist in memory at the same time and will operate as a single program. You can use this feature to substitute one module for another under varying conditions or for different applications.

Plus Signs Between Filespecs

If you give two or more source filespecs separated by plus signs (+) as arguments to LOAD, they are compiled together as if they were a single file. Their object module is stored under any filename given as the "object" argument of the command, or (if none) under the last filename in the group and file type .REL.

Indirect Files as Arguments

You can store arguments (source and object filespecs, switches) of a LOAD command in an indirect file, and specify them by typing an at sign (@) and its filespec as a LOAD command argument.

Establishing Default Arguments with the SET Command

You can issue the SET DEFAULT COMPILE-SWITCHES command to set up default global arguments to the LOAD command. Insert this SET command in your COMAND.CMD file to change your own defaults permanently.

Running Link Directly

The LOAD command automatically runs LINK, the system's loader program, but if you require more control of the loading process you can run LINK directly. See the TOPS-20 LINK Reference Manual.

Using GET Instead of LOAD

If you have used the SAVE command to save your programs in executable format, you can use the GET command instead of LOAD to place them in memory. This is a faster and less expensive means of loading programs into memory.

Restrictions

Switches Requiring Compilation

/CREF
/DEBUG
/LANGUAGE-SWITCHES
/LIST
/NODEBUG
/NOLIST
/NOOPTIMIZE
/OPTIMIZE

The above switches will not take effect unless the LOAD command causes a new compilation of the relevant source file. See Characteristics - Compiling New Sources Only, above, for more information.

Warning - Generation Numbers, Long Filespecs

You must not give generation numbers when specifying source or object files; the system automatically uses the highest generation. Also, most compilers require filenames of 6 or fewer characters and file types of 3 or fewer characters.

Effect on Memory and Terminal

The LOAD command clears memory and loads your program. It leaves your terminal at TOPS-20 command level.

Related Commands

COMPILE, EXECUTE, and DEBUG	other LOAD-class commands for performing related functions
SAVE	for saving the loaded program in an .EXE file
START	for starting the loaded program
SET DEFAULT COMPILE-SWITCHES	for establishing default switches for LOAD-class commands

INFORMATION DEFAULTS COMPILE-SWITCHES	for examining default switches established for LOAD-class commands

Examples

1. Load an object file into memory.

```
@LOAD LSTSQ.REL
LINK:   LOADING

EXIT
@
```

2. Load the same program, allowing the system to update the object file if necessary.

```
@LOAD LSTSQ/FORTRAN
FORTRAN: LSTSQ
MAIN.
LINK:   LOADING

EXIT
@
```

3. Load a MACRO program and request a loader map or memory map. (Notice the filename of this map.)

```
@LOAD TEST2/MAP
MACRO:  FT
LINK:   LOADING

EXIT
@TDIRECTORY

                    WRITE


   PS:<LATTA>
 FT.MAP.1         6-APR-78 15:23:17
 TEST2.REL
@
```

4. Load a COBOL program, forcing a new compilation that includes only the required modules. Request a map.

```
@LOAD /MAP TEST1/COMPILE, COBLIB/SEARCH
COBOL:  OBL      [TEST1.CBL]
LINK:   LOADING

EXIT
@
```

LOAD (Cont.)

5. Compile a program. Then load it, requesting a cross-reference listing this time. Finally, save the program in executable format.

```
@COMPILE TEST1/COBOL
COBOL:  OBL      [TEST1.CBL]
@LOAD /COMPILE/CREF
COBOL:  OBL      [TEST1.CBL]
LINK:   LOADING

EXIT
@SAVE
 TEST1.EXE.1 SAVED
@
```

6. Combine two FORTRAN sources into an object program under a new name. Start this program.

```
@LOAD LSTSQ+ABRR REGRES
FORTRAN: LSTSQ
MAIN.
MAIN.
LINK:   LOADING

EXIT
@START
@
```

7. Create an indirect file, and use it to load several modules at once. Request cross-reference files, then give the CREF command to turn these into listings.

```
@CREATE SERVTT.CMD
INPUT: PS:SERVTT.CMD.1
00100   HJRAD/COMPILE,FORLIB/SEARCH
00200   HJVTT/COMPILE,FORLIB/SEARCH
00300   HJINI/RELOCATABLE
00400   $
*E

[SERVTT.CMD.1]
@LOAD /CREF @SERVTT.CMD
FORTRAN: HJRAD
MAIN.
FORTRAN: HJVTT
MAIN.
LINK:   LOADING

EXIT
@CREF
CREF:   HJRAD
CREF:   HJVTT
@
```

LOGIN

Function

The LOGIN command validates you as a user, and CONNECTs your job to and ACCESSes your log-in directory.

Format

```
@LOGIN (USER) name (PASSWORD) pwd (ACCOUNT) acc (SESSION REMARK) remark
```

where

name	is your user name

pwd	is your secret password (which is not printed on your terminal)

acc	is an account name or number that you are authorized to use

remark	is an optional comment of 39 or fewer characters, describing the coming terminal session

Output

Notice of User Mail, and System Mail

After the system acknowledges a valid LOGIN command by printing your job number, terminal number, and the current date and time, it informs you if another user has sent you a message by means of the system mail programs. Then system mail (mail sent by privileged users to all users) that has accumulated since your last log-in is displayed on your terminal. Note however, that this mail appears in the log file if a batch job is run for you between the time the mail is sent and the time you log in.

Characteristics

Typing an Initial CTRL/C

Before logging in you may have to type a CTRL/C or carriage return (which will print the system herald or greeting) to get the @ prompt necessary for typing the LOGIN command. If you are dialing in by telephone to a line declared autobaud by the system manager, this initial CTRL/C or a carriage return will enable the system to determine your terminal's speed setting, as long as the speed is either 110, 150, or 300.

Rights, Capabilities, and Charges

The LOGIN command gives you ownership rights to your log-in directory, and any group rights established for you on the public structure (usually named PS:). In addition, you are granted whatever capabilities (for example, Maintenance, Wheel) have been awarded to you, and can be sure that any charges you incur for the use of system resources, such as CPU time or the batch and printing systems, will be billed to your user name.

Hints

Commands in Files Executed at Log-in Time

TERMINAL Commands

If you have commands in a your LOGIN.CMD file in your log-in directory that control terminal output (e.g., TERMINAL PAUSE or TERMINAL LENGTH), be sure to put them before the first command that runs a program. Then they will be in effect when system mail is displayed.

For Affecting Entire Session or Current Level Only

As soon as you log in, the system executes the commands contained in your LOGIN.CMD file and then your COMAND.CMD file in your log-in directory. Commands that affect your entire job, for example, TERMINAL and DEFINE, belong in LOGIN.CMD. Commands that affect only the current level of TOPS-20, for example, many SET commands, must be put into COMAND.CMD if you want them to be executed automatically after every PUSH command as well as after LOGIN.

For Affecting Batch Jobs

As soon as one of your batch jobs logs in, the system executes the commands contained in your BATCH.CMD file and then your COMAND.CMD file in your log-in directory. Note that certain parameters of the batch job, for example, its time limit and the name of its log file, have already been set before these commands are executed. Such parameters are set either to values specified by switches in the SUBMIT command that starts the batch job, or to default values in effect for the job issuing this SUBMIT command. See also Hints - For Affecting Nested Batch Jobs, below.

For Affecting Nested Batch Jobs

By placing a SET DEFAULT SUBMIT command in a file of specification BATCH.CMD in your log-in directory, you cause these defaults to be in effect for a nested batch job, i.e., a batch job started by a SUBMIT command within the control file of another of your batch jobs. Note that if the control file contains a PUSH command before the SUBMIT, any SET DEFAULT SUBMIT command in a file of specification COMAND.CMD in your log-in directory will be in effect instead, because commands in COMAND.CMD are executed after every PUSH command as well as at log-in time.

A Final TAKE Command

To avoid display of a message of the form, "End of file.CMD" after execution of a command file, make the last command in such a file a TAKE command with no arguments.

Simplifying Log-ins

By using the SET DIRECTORY ACCOUNT-DEFAULT command you cause subsequent LOGIN commands to require just your user name and password.

Special Cases

Commands You Can Issue Before Log-in

You can give these commands before logging in:

ATTACH	
BREAK	with arguments:
DAYTIME	
INFORMATION	AVAILABLE
	COMMAND-LEVEL
	MAIL
	TERMINAL-MODE
	VERSION
LOGOUT	
SET	LATE-CLEAR-TYPAHEAD
	TIME-LIMIT
SYSTAT	(except with subcommands LPT or OUTPUT)
TERMINAL	
UNATTACH	

Logging in to PTYs

You do not need to give a password when logging in under your own user name to a PTY (pseudo-terminal).

Must Log In Within Five Minutes

If you do not log in within five minutes of your initial CTRL/C, your job will be logged out automatically and you will have to type CTRL/C again.

Logging in to Last Available Job Slot

If you attempt to log in to the last available job slot, the system will not log you in but will send you an error message instead. This job slot is intended for users who wish to attach detached jobs using the ATTACH command. To log in a new job you must wait until a current user logs out.

Effect on Memory and Terminal

The LOGIN command does not affect memory and leaves your terminal at TOPS-20 command level. However, commands in command files executed during log-in (see Hints, above) will have their usual effect on memory and your terminal.

Related Commands

ATTACH	for joining to your terminal a job that has already been logged in
LOGOUT	for ending your timesharing job
SET ACCOUNT	for changing your account during a terminal session
SET DIRECTORY ACCOUNT-DEFAULT	for specifying a default account for subsequent log-ins
SET SESSION-REMARK	for making or changing your session remark during a terminal session

Examples

1. Log in, using account 341.

```
@LOGIN C.RYDER 341
 Job 39 on TTY41 8-May-79 11:04:21
@
```

2. Type a CTRL/C to get the TOPS-20 greeting, then log in, using account 341 and inserting a session remark. Give INFORMATION JOB as your first command, to see this session remark.

```
 SYSTEM 2102 DEVELOPMENT SYSTEM, TOPS-20 Monitor 4(3212)
@LOGIN URQUHART 341 TEST-REMARK
 Job 42 on TTY29 8-May-79 9:15:15
 End of LOGIN.CMD.1
@INFORMATION JOB
 Job 42, User URQUHART, Account 341, TTY29
Session remark: TEST-REMARK
@
```

LOGOUT

Function

The LOGOUT command ends a timesharing job.

Format

```
@LOGOUT n
```

where

n   is an optional job number. Specify n only when logging out a job other than your attached job.

Output

System Use Under Current Account

The system acknowledges a valid LOGOUT command by printing your job number, user name, current account, terminal number, and the current date and time. Then it shows the total amount of CPU time you used during the terminal session and the total length of time you were logged in, followed by the amount of CPU time used under the current account and the length of time you were logged in under this account.

Characteristics

Expunging Your Log-in and Connected Directories

Before logging you out, the system expunges any deleted files from your log-in and connected directories, and prints a message if either directory is still exceeding its assigned permanent disk quota.

Logging Out Other Jobs

By specifying a job number you can log out any other job logged in under the same user name as your attached job. By specifying a job number, a user with Wheel or Operator capabilities enabled can log out any job other than his attached job.

Effect on Memory and Terminal

The LOGOUT command clears memory and leaves your terminal in the state before log-in. LOGOUT n does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DETACH	for disengaging a job from your terminal without ending the job
LOGIN	for beginning your timesharing job
UNATTACH	for disengaging a job from another terminal without ending the job

Examples

1. Log out your job.

```
@LOGOUT
Killed Job 18, User C.RYDER, Account 341, TTY 233,
  at 8-May-79 16:25:46, Used 0:0:5 in 1:2:16
```

2. Log out your job, receiving a warning message that your directory is over its storage quota.

```
@LOGOUT
 <URQUHART> Over permanent storage allocation by 8 page(s).
Killed Job 39, User URQUHART, Account 341, TTY 41
  at  8-May-79 16:33:12,  Used 0:0:1 in 0:1:56
```

3. Check what jobs are logged in under your user name. Log out a detached job and verify that it is gone, then log out your attached job.

```
@SYSTAT LATTA
  39    DET   EXEC     LATTA
  43*   226   EXEC     LATTA
@LOGOUT 39
@SYSTAT LATTA
  43*   226   EXEC     LATTA
@LOGOUT
Killed Job 43, User LATTA, Account 341, TTY 226,
  at  8-May-79 16:35:16,  Used 0:0:1 in 0:1:1
```

MERGE

Function

The MERGE command places an executable program into memory, combining it with whatever program (if any) is already there.

Format

```
@MERGE filespec/switch
```

where

```
filespec      is the file specification of any executable program
                   Default file type - .EXE

/switch       is     /USE-SECTION:n
                     specifies the memory section (from 0 to 37
                     octal) into which your program is to be
                     merged.  You can use this switch only if your
                     program can be contained in one section.
```

Characteristics

Executable Files Only

If a program you try to merge is not in executable format, you may get an immediate error message (that is, "?UNEXPECTED END-OF-FILE TRAP...") or a delayed one (that is, "?ENTRY VECTOR LENGTH IS NOT LESS THAN 1000") after the merge. In either case, be sure that you have specified an executable program before investigating further. The MERGE command does not alter the entry vector if the file being merged is in the proper .EXE format.

Page Overlays

If there is a program already in memory when you give the MERGE command, it will remain intact unless some pages of the new program overlay it. In such a case the new pages replace the old. However, if the file being merged was created by a CSAVE command, the merge and any replacements occur on a word-for-word basis, rather than page for page.

Examples

1. Merge an executable program into memory.

```
@MERGE TESTF1.EXE
@
```

2. Place an executable system program in memory, then merge a system debugging program with it. Give INFORMATION MEMORY-USAGE commands to verify that both programs are intact.

```
@GET SYS:OUMPER
@INFORMATION MEMORY-USAGE

 18. pages, Entry vector loc 3067 len 3

0         PS:<NEXT-RELEASE>DUMPER.EXE.1   1    R, CW, E
3-23      PS:<NEXT-RELEASE>DUMPER.EXE.1   2-22   R, CW, E

@MERGE SYS:UODT
@INFORMATION MEMORY-USAGE

25. pages, Entry vector loc 3067 len 3

0         PS:<NEXT-RELEASE>OUMPER.EXE.1   1    R, CW, E
3-23      PS:<NEXT-RELEASE>OUMPER.EXE.1   2-22   R, CW, E
770-776   PS:<LOAOTEST>UOOT.EXE.7   1-7   R, CW, E

@
```

MODIFY

Function

The MODIFY command adds or changes switches for a request placed in a batch or output queue.

Format

```
@MODIFY (REQUEST TYPE) queue (ID) identifier /switch(es)
```

where

queue — is the waiting list in which you placed the original request, chosen from the following list:

BATCH — for requests made using the SUBMIT command

CARDS — for requests made using the PUNCH CARDS command

PAPER-TAPE — for requests made using the PUNCH PAPER-TAPE command

PLOT — for requests made using the PLOT command

PRINT — for requests made using the PRINT command

In the switch summary and descriptions, the word Output in the column headed Applicable Queues means all queues except the batch queue.

identifier — is one of the following:

request ID number — the unique identifier assigned by the system to your request. This is the number appearing under the heading "Req#" in the list of requests shown by the INFORMATION BATCH-REQUESTS or INFORMATION OUTPUT-REQUESTS command.

jobname — the jobname of the request, either the first six characters of the first filename in the request, or the argument you supplied to a /JOBNAME switch when making the original request. This is the name appearing under the heading "Job Name" in the list of requests shown by the INFORMATION BATCH-REQUESTS or INFORMATION OUTPUT-REQUESTS command.

/JOBNAME:jobname — switch showing the jobname of the request to modify. You can specify a particular jobname when making the original request. See Special Cases - /JOBNAME Switch, below.

/SEQUENCE:sequence number — switch showing the sequence number of the request to modify. You can specify a particular sequence number when making the original request.

Use an asterisk (*) as identifier to modify all your requests in the specified queue.

/switches — are keywords, chosen from the list below, specifying the parameter you want to change (and, where applicable, the new value of this parameter)

Summary of MODIFY Command Switches

Switch	Applicable Queues		
/AFTER:date and/or time			All
/BEGIN:n			All
/CARDS:n		BATCH	
/COPIES:n			Output
/DELETE			Output
/DEPENDENCY-COUNT:n		BATCH	
/DESTINATION-NODE:node name::			All
/FEET:n		BATCH	
ASCII	PRINT		
COBOL	PRINT		
/FILE:ELEVEN	PRINT		
FORTRAN	PRINT		
/FORMS:forms name			Output
/GENERIC			Output
/HEADER			Output
/JOBNAME:jobname		BATCH,	Output
/LIMIT:n	PRINT		
/LOWERCASE	PRINT		
/MODE:output mode			Output
/NOHEADER			Output
/NOTE:12-character message			Output
/PAGES:n		BATCH	
/PRIORITY:n			All
/PROCESSING-NODE:node name		BATCH	
/REPORT:title	PRINT		
NO			
/RESTARTABLE:YES		BATCH	

Summary of MODIFY Command Switches (Cont.)

Switch	Applicable Queues
/SEQUENCE:n	All
/SPACING: SINGLE DOUBLE TRIPLE	PRINT
/TIME:hh:mm:ss	All
/TPLOT:n	BATCH
/UNIQUE: 0 or NO 1 or YES	BATCH
/UNIT:octal number	Output
/UPPERCASE	PRINT
/USER:user name	All

MODIFY Command Switches

	Applicable Queues	
/AFTER:date and/or time, or day of week (or TODAY) and/or time	All	ensures that the request will not be processed until after the revised date and/or time specified. NOV-12-79, and 18:00 illustrate two arguments to this switch. If you give both date and time, separate them with a space. When given alone, the time may be preceded by a plus sign (+), which will delay processing by the indicated length of time from the present. Alternatively, you can give a day of the week (e.g., MONDAY) or TODAY as argument; then the job will not be printed until the beginning of the following day. If you follow this argument with a plus sign and a time, the job will be further delayed by this amount.

MODIFY Command Switches (Cont.)

/BEGIN:n		All	gives the decimal line number of the control file at which processing is to begin (for BATCH), or the decimal page number of the file at which the output is to begin (for CARDS, PAPER-TAPE, PLOT, and PRINT)
/CARDS:n	BATCH		specifies the decimal number of spooled cards the job is allowed to punch
/COPIES:n		Output	tells how many copies of the file to produce
/DELETE		Output	deletes the file after processing
/DEPENDENCY-COUNT:n	BATCH		sets the request's dependency count to the new value n. This switch can also be followed by a signed value, i.e., +n or -n, which will increase or decrease the old value by the specified amount. A batch request is not processed until its dependency count is 0. See the TOPS-10/20 Batch Reference Manual for more information about dependency counts.
/DESTINATION-NODE:node name::		All	specifies the DECnet network node on whose line printer the log file of your batch job is to be printed (for BATCH), or the network node on whose line printer or other output device your request is to be processed (CARDS, PAPER-TAPE, PLOT, and PRINT). The node name must be of six or fewer characters and must be followed by two colons (::).

MODIFY Command Switches (Cont.)

/FEET:n	BATCH	specifies the decimal number of feet of spooled paper tape the job is allowed to punch
ASCII COBOL /FILE:ELEVEN FORTRAN	PRINT	specifies that the file consists of ASCII text, or COBOL SIXBIT text; or (ELEVEN) contains four eight-bit bytes in each 36-bit word; or is FORTRAN ASCII text, where column 1 of each line is interpreted as a carriage control character.
/FORMS:forms name	Output	specifies, in six or fewer characters, new forms (determining the size of banner, header, and trailer sections; the paper color, width, and weight; vertical format, carriage control tape, the number of plotter steps per inch, etc.) to use with the job
/GENERIC	Output	allows the output to be produced on any available device (Use along with argument PRINT to cancel the /LOWERCASE or /UPPERCASE switch, or with PLOT, PRINT, CARDS, or PAPER-TAPE to cancel the /UNIT switch.)
/HEADER	Output	causes a header section containing the jobname to be plotted, printed, or punched before the file itself is produced
/JOBNAME:jobname	All	does not change the jobname, but specifies which job to modify. Same as jobname in "identifier" argument.

MODIFY Command Switches (Cont.)

/LIMIT:n	Output	places a new limit of n cards, feet, or pages on the output of the job
/LOWERCASE	PRINT	specifies that the file is to be produced on a line printer capable of printing lowercase characters
ASCII BCD /MODE:BINARY IMAGE	CARDS	designates the mode for punching the file onto cards. See the /MODE switch in the PUNCH command description for details.
ASCII BINARY /MODE:IMAGE IMAGE-BINARY	PAPER-TAPE	designates the mode for punching the file onto paper tape. See the /MODE switch in the PUNCH command description for details.
ASCII /MODE:BINARY IMAGE	PLOT	designates the mode for plotting the file. See the /MODE switch in the PLOT command description for details.
ARROW ASCII /MODE:OCTAL SUPPRESS	PRINT	designates the mode for printing the file. See the /MODE switch in the PRINT command description for details.
/NOHEADER	Output	prevents a header section containing the jobname from being produced before the file is produced.

MODIFY Command Switches (Cont.)

/NOTE:message	Output	labels the header section of output, i.e., the section displaying the jobname, with a message or notation of up to 12 characters. The message must be enclosed in double quotation marks if it contains spaces or punctuation characters.
/PAGES:n	BATCH	specifies the decimal number of spooled line printer pages the job is allowed to print
/PRIORITY:n	All	assigns a new number n reflecting the urgency of the request. This n must be from 1 to 63, with larger numbers receiving earlier treatment.
/PROCESSING-NODE:node name::	BATCH	specifies the DECnet network node on whose CPU the job is to be run. The node name must be of six or fewer characters and must be followed by two colons (::).
/REPORT:title	PRINT	scans your files and processes only those lines whose first characters are the title you give. This title can contain up to 12 characters (including the quotation marks that must enclose the title if it contains spaces). The switch is used along with the COBOL report writer.
NO /RESTARTABLE:YES	BATCH	specifies whether the job should be started again if the system crashes crashes and restarts.

MODIFY Command Switches (Cont.)

/SEQUENCE:n	All	does not change the sequence number of the job but rather specifies which job to modify. Giving this switch is an alternative to supplying a request ID as the request identifier when you have several jobs with the same jobname (if you supply only the jobname to identify the job, the MODIFY command affects all of them).
DOUBLE /SPACING:SINGLE TRIPLE	PRINT	determines the spacing between printed lines
/TIME:hh:mm:ss	BATCH	revises the limit for the maximum amount of CPU time available to the job; given in hours, minutes, and seconds.
/TPLOT:n	BATCH	limits to n the maximum number of minutes of spooled plotter time allowed for the job
NO or 0 /UNIQUE:YES or 1	BATCH	changes your declaration, if two or more jobs are to use the same connected directory, whether they must run at separate times
/UNIT:octal number	Output	directs your request to the line printer of the specified octal unit number
/UPPERCASE	PRINT	specifies that the file is to be produced on a line printer that uses uppercase characters only
/USER:user name	PRINT, BATCH	specifies the user whose request is to be modified; for privileged users only.

Characteristics

MODIFY Effective Only Before Processing

The MODIFY command affects a batch or output request only before processing has begun. After processing has begun, you can only cancel the request with the CANCEL command, and then make a new request.

Hints

Using the /DEPENDENCY-COUNT Switch

You can use the /DEPENDENCY-COUNT switch to specify the order in which your batch jobs are processed. Set the dependency count of all but the first job to some positive value when you submit them, and include MODIFY commands in each job's control file to bring the next job's dependency count to 0 at the appropriate time. See Example 4.

Special Cases

/JOBNAME Switch

In the singular case when you want to modify several queue requests of the same jobname using only one command, and that jobname is purely numerical (e.g., 5045), you must use the /JOBNAME:jobname switch as second argument to the MODIFY command. Do not also give the request ID or jobname as a command argument if you give the /JOBNAME:jobname switch.

Effect on Memory and Terminal

The MODIFY command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

CANCEL	for removing batch and output requests
INFORMATION BATCH-REQUESTS	for examining entries in the batch queue
INFORMATION OUTPUT-REQUESTS	for examining entries in the output queues
PLOT	for placing requests in a plotter output queue

PRINT	for placing requests in a line printer output queue
PUNCH	for placing requests in a card punch or paper tape punch output queue
SUBMIT	for placing requests in the batch input queue

Examples

1. Modify a batch request (of jobname ARTIFI) to make it start more quickly.

```
@MODIFY BATCH ARTIFI /PRIORITY:63
[1 Job Modified]
@
```

2. Modify a print request (of jobname PHIAL) to include a note on the header page.

```
@MODIFY PRINT PHIAL /NOTE:"DUE: 11/4"
[1 Job Modified]
@
```

3. Modify one job of several having the same jobname.

```
@INFORMATION OUTPUT-REQUESTS /USER

Printer Queue:
Job Name  Req#  Limit  User
--------  ----  -----  --------
  PRTSK    226     27  LATTA /After: 8-Nov-79 17:00
  PRTSK    236     27  LATTA /After: 8-Nov-79 17:00
  PRTSK    237     27  LATTA /After: 8-Nov-79 17:00
  PRTSK    238     27  LATTA /After: 8-Nov-79 17:00
  TESTF1   219     54  LATTA /Forms:NARROW
          /After:15-Nov-79 17:00
There are 5 Jobs in the Queue (None in Progress)


@MODIFY PRINT 237 /AFTER:18:00
[1 Job Modified]
@
```

4. Use the TYPE command to examine some of your control files. (Notice the use of the MODIFY command within these files to ensure that they are processed in a certain order when submitted together.) Submit these three control files and verify their placement in the batch input queue.

```
@TYPE ARVM%.CTL
 ARVM1.CTL.2

@RUN TESTF1
@PRINT TESTF1.RSM
@MODIFY BATCH ARVM2 /DEPENDENCY-COUNT:0

 ARVM2.CTL.2

@RUN TESTF2
@PRINT TESTF2.RSM
@MODIFY BATCH ARVM3 /DEPENDENCY-COUNT:0

 ARVM3.CTL.2

@RUN TESTF3
@PRINT TESTF3.RSM
@PRINT SUMJOB.RSM
@SUBMIT /AFTER:17:00 ARVM1
[Job ARVM1 Queued, Request-ID 240, Limit 0:05:00]
@SUBMIT /DEPENDENCY-COUNT:1 ARVM2
[Job ARVM2 Queued, Request-ID 241, Limit 0:05:00]
@SUBMIT /DEPENDENCY-COUNT:1 ARVM3
[Job ARVM3 Queued, Request-ID 242, Limit 0:05:00]
@INFORMATION BATCH-REQUESTS /ALL/USER

Batch Queue:
Job Name  Req#  Run Time   User
--------  ----  --------   ------
  ARVM1    240  00:05:00   LATTA /After: 8-Nov-79 17:00
          /Uniq:Yes  /Restart:No   /Assist:Yes  /Seq:1804
  ARVM2    241  00:05:00   LATTA /Dep:1   /Uniq:Yes   /Restart:No
          /Assist:Yes  /Seq:1805
  ARVM3    242  00:30:00   LATTA /Dep:1   /Uniq:Yes   /Restart:No
          /Assist:Yes  /Seq:1806
There are 3 Jobs in the Queue (None in Progress)

@
```

MOUNT

Function

The MOUNT command requests that the specified file structure or magnetic tape set be made available for your job's use.

Format

```
@MOUNT medium (NAME) dev:  /switch(es)
```

where

medium — is one of the following:

STRUCTURE - for mounting file structures (disk packs)

TAPE - for mounting magnetic tapes

dev: — is either the structure identification (or alias), or the tape setname. It must be of six or fewer alphanumeric characters and must be terminated by a colon.

/switches — are keywords, chosen from the list below, indicating your choice of MOUNT command options

Summary of MOUNT Command Switches (defaults in boldface)

```
/CHECK-SETNAME

          200
          556
          800
/DENSITY:1600
          6250
          SYSTEM-DEFAULT

             7-TRACK
/DRIVE-TAPE:9-TRACK

             ANSI
             BYPASS
/LABEL-TYPE:EBCDIC
             TOPS-20
             UNLABELED

/NEW
/NOUNLOAD
/NOWAIT
/OPERATOR
```

```
/PROTECTION:octal protection code         Default code - 770000
/READ-ONLY                                Default - unless /NEW or
                                                   /SCRATCH specified
/REMARK:119-character remark
/SCRATCH
       NUMBER number
/START:VOLID volid                        Default number - 1

/STRUCTURE-ID:structure identification
/VOLIDS:list of volids
/WRITE-ENABLED                            Default - if /NEW or /SCRATCH
                                                   specified
```

The switches /NOWAIT and /REMARK are useful with either the STRUCTURE or TAPE medium, while /STRUCTURE-ID is for STRUCTURE only; the other switches are for TAPE only.

MOUNT Command Switches

```
/CHECK-SETNAME
```

ensures that the setname of the mounted tapes matches the setname you specify as the "dev:" argument to the MOUNT command; otherwise an error will be generated. For labeled tapes only.

```
          200
          556
          800
/DENSITY:1600
          6250
          SYSTEM-DEFAULT
```

specifies the density, in bits per inch, at which the tape set is to be read or written. Densities 200 and 556 are for unlabeled tapes only. SYSTEM-DEFAULT, one of the values shown (usually 1600), is established at system start-up time.

```
             7-TRACK
/DRIVE-TYPE:9-TRACK
```

specifies the type of drive on which the tape set is to be mounted. Labeled tapes must be mounted on 9-track drives.

```
             ANSI
             BYPASS
/LABEL-TYPE:EBCDIC
             TOPS-20
             UNLABELED
```

tells the system to read and write the tape set according to the specified label standard: ANSI; EBCDIC - IBM types (in read-only mode); TOPS-20 - a superset of ANSI used in TOPS-20 systems; UNLABELED - for unlabeled tapes only. BYPASS (for privileged users only) lets you read and write any tape, labeled or unlabeled, without any label processing.

MOUNT Command Switches (Cont.)

/NEW

tells the system that you are creating a new file set on an existing tape set, whose setname is then changed to be the name you specify as the dev: argument to the MOUNT command. (If the tape set has more than one volume, remember to specify their volids using the /VOLIDS or /OPERATOR switch.) The /CHECK-SETNAME and /READ-ONLY switches are ignored if present, and /WRITE-ENABLED is assumed. Do not give the /START switch if you give /NEW.

/NOUNLOAD

asks the system not to unload a volume (reel) of tape from its tape drive when the drive is released by a volume switch (change of volumes required by a read or write operation) or DISMOUNT command. Use this switch to facilitate processing when sufficient drives are available.

/NOWAIT

tells the system to return your terminal to TOPS-20 command level as soon as you give the MOUNT command, and to send a message to your terminal when the request has been processed. Otherwise, your terminal waits for the message.

/OPERATOR

asks the operator to specify to the system the volids of the tape set you wish to mount. Do not use if you have given the /VOLIDS switch.

/PROTECTION:code

specifies a 6-digit octal protection code for new volumes of tape written during the current mount request. The owner always has full access to his tapes, so the first two digits are always interpreted as "77"; also, user groups and directory groups have no effect on tape access, so the middle two digits are always interpreted as "00". Therefore, although six digits can be specified, only the last two digits affect the tape's protection code.

MOUNT Command Switches (Cont.)

(If you specify only two digits, these will be used as the last two digits of the protection code.) These two digits should be the sum of the values corresponding to the modes of access you want to allow, chosen from the following list:

40 - read files in the file set

10 - overwrite or modify files in the file set

04 - append files to the end of the file set

For tapes of label-type TOPS-20 only.

Default code - 770000

/READ-ONLY

ensures that all volumes in the tape set will be mounted without write rings, to prevent accidental erasures

Default except when /NEW or /SCRATCH is specified

/REMARK:"remark"

sends the specified remark (of 119 or fewer characters, which must be enclosed in quotation marks (")) to the operator when he is notified of your mount request. For structures, the remark will be sent only if the structure must be put on line or physically mounted to satisfy your mount request.

/SCRATCH

same as /NEW, except that the volumes in the file set you create will be drawn from the pool of scratch tapes (tapes not presently owned by a particular user), rather than from volumes you specify. Use this switch to create a new file set when you are not supplying the volumes of tape to be used.

MOUNT Command Switches (Cont.)

      NUMBER number
/START:VOLID volid

tells the system which volume (reel) of tape to mount first when satisfying your request. (You must also give the /VOLIDS switch, specifying the group of volumes you will be using.) Use the NUMBER argument to give the order of this volume within the group (e.g., 1 for first, 2 for second), or give the VOLID argument to repeat the volid explicitly. You can use this switch to save time and expense when you know which volume you will be using first.

Default - NUMBER 1

/STRUCTURE-ID:structure identification

gives the name of the structure as recorded in the disk(s); used when you gave an alias different from the structure identification as argument "dev:", above. See Hints - Using the /STRUCTURE-ID Switch, below. For privileged users only.

/VOLIDS:volid, volid,...

specifies the volids (volume identifiers) of the volumes (reels) of tape you want to access. These must be consecutive volumes, usually of the tape set specified as the "dev:" argument to the MOUNT command. Although you need not specify every volume in the set, any volume not specified will not be accessible. Do not use this switch if you have given the /OPERATOR switch. See also Characteristics - Using the /VOLIDS Switch, below.

/WRITE-ENABLED

ensures that all volumes in the tape set will be mounted with write rings

Default when /NEW or /SCRATCH is specified

Characteristics

Action of MOUNT STRUCTURE Command

If the Structure Has Already Been Mounted

If the structure for which you give the MOUNT command is currently mounted, the system simply increases by 1 the mount count, i.e., the number of users who have given the MOUNT but not the DISMOUNT command for the structure, and returns your terminal to TOPS-20 command level. A structure is not ordinarily dismounted until its mount count is 0.

If the Structure Has Not Yet Been Mounted

If the structure for which you give the MOUNT command is not currently mounted, your request stays in the mount request queue until it is acted upon by the operator or until you cancel the request.

Setnames (File Set Identifiers)

The setname, or file set identifier of a set of tapes, is part of the label information written into each volume of the set. It is rewritten every time the /NEW or /SCRATCH switch is included in a MOUNT command. The "dev:" argument of the MOUNT command becomes the setname in this case. If you add volumes to an existing tape set, the system uses the setname of the old volumes as the setname of the new ones.

Using the /CHECK-SETNAME Switch

If you give the MOUNT command to use an existing file set (i.e., you do not specify the /NEW or /SCRATCH switch), you can give the /CHECK-SETNAME switch to be sure that the setname written on the tapes matches the setname you specify as the "dev:" argument to the MOUNT command. However, because more than one set of tapes can have the same setname, the /CHECK-SETNAME switch does not ensure that the correct tape set will be mounted. For information about ensuring that the correct tapes are mounted, see Characteristics - Using the /VOLIDS Switch, below.

Volids (Volume Identifiers)

The volid, or volume identifier of a volume (reel) of labeled tape, is part of the label information written into each volume of tape. It is written only once, by the operator during the tape's initialization procedure, and is not changed during the life of the tape. (You should also affix a paper label displaying the volid onto each reel of tape.) You can get a list of volids for previously specified or newly written volumes in any mounted tape set by giving the INFORMATION VOLUMES command for that set.

Using the /VOLIDS Switch

If you give the MOUNT command to use an existing multi-volume tape set (i.e., you do not specify the /SCRATCH switch), you can give the volid of each volume you want to use as an argument to the /VOLIDS switch. The system ensures that the correct volumes of a labeled tape will be mounted for your job as long as you use the /VOLIDS switch to specify them. (If the tape set does not consist of labeled tapes, the system does not ensure that the correct tapes are mounted.) The volids must represent consecutive volumes and must be specified in the order written (oldest first). Note that in general you cannot rely on any apparent alphanumerical order when specifying the volids but must maintain your own list of the volids in each tape set. (See Hints - Keeping Track of Volids, below.) You need not specify every volid in the tape set, but any volume not specified will not be accessible through the current MOUNT command. See also Characteristics - Using the /OPERATOR Switch, and Special Cases - Single-volume Tape Sets, below.

Using the /OPERATOR Switch

You can use the /OPERATOR switch instead of the /VOLIDS switch when asking the system to mount a multi-volume set of tapes. The /OPERATOR switch sends a message to the operator asking him to specify the volid of each volume himself. You must be sure to supply the operator with a list of the volids you want him to specify before giving a MOUNT command that contains the /OPERATOR switch.

Hints

Checking Whether Operator is Present

You can give the INFORMATION SYSTEM-STATUS command to find out whether the operator is in attendance and can process your mount request. Even if the operator is not in attendance, your request remains valid until he returns and deals with it in some way.

Using the /STRUCTURE-ID Switch

The /STRUCTURE-ID switch (available only to users with enabled Wheel or Operator capabilities) gives the name of the structure as recorded in the disk(s) of the structure itself, where it is used by the system for identification. Be sure that the structure identification is also written with a felt-tip marker on the upper surface of each disk pack, and on a gummed label on the pack cover. Unless you give this switch, the system mounts the structure with its structure identification as alias. (The alias is the name you use when specifying the structure in file specifications and commands; the INFORMATION STRUCTURE and INFORMATION AVAILABLE DEVICES commands list structures by alias only.) The /STRUCTURE-ID switch allows an enabled Wheel or Operator to mount a structure under a name different from the one recorded in the structure. Use this switch for mounting a structure whose structure identification is the same as the alias of a currently mounted structure. In such cases give the MOUNT STRUCTURE command with any unique alias as the "dev:" argument, and specify the structure identification with the /STRUCTURE-ID switch. In subsequent file specifications and commands referring to the structure, use the alias only.

Dummy "dev:" Arguments for Mounting Tapes

If you want to use different tape sets on successive runnings of a single program, you can refer to those tape sets as a logical name in the program, and use this logical name as the "dev:" argument of your MOUNT command when mounting tapes. As long as you also specify the volid of each volume of tape with the /VOLIDS switch (or use the /OPERATOR switch to ask the operator to do so), you need not give the actual setname of the tape set as the "dev:" argument to the MOUNT command. The system considers the "dev:" argument you supply to be a logical name defined as the mounted tape set. Therefore, your program can access the tape set using this logical name.

Keeping Track of Volids

Unless your site has a tape cataloging facility, you must keep your own record of the volids in each of your tape sets. After creating a file set on a new tape set, i.e, one not previously owned by you (by giving the MOUNT command and including the /SCRATCH switch), you should give the INFORMATION VOLUMES command for the set before giving the DISMOUNT command. The system will respond by printing a list at your terminal of the volids of all volumes in the tape set. Similarly, if you mount an old tape set and then perform write operations, you should give INFORMATION VOLUMES before giving DISMOUNT to learn the volids of any volumes added to the set. Keep an ordered list of these volids in a disk file in your directory, for use in subsequent MOUNT commands when you give the /VOLIDS switch.

Special Cases

Single-volume Tape Sets

If the tape set you want to mount consists of a single volume of tape, you need not give the /VOLIDS or /OPERATOR switch to specify its volid. You can give the volid as the "dev:" argument to the MOUNT command.

Structures Unavailable for Mounting

If the operator has given the OPR program command, SET STRUCTURE UNAVAILABLE for a specified structure, the system sends an error message including the phrase, "Structure unavailable for mounting" in response to subsequent MOUNT commands for the structure.

Restrictions

Using SET TAPE Commands

The TOPS-20 SET TAPE DENSITY and SET TAPE PARITY commands are applicable to unlabeled tapes only (but see also Warnings - /DENSITY Switch Has Limited Effect for Unlabeled Tapes, below). The SET TAPE FORMAT and SET TAPE RECORD-LENGTH commands are applicable to both labeled and unlabeled tapes, but to labeled tapes only if they are mounted using the /LABEL-TYPE:ANSI or /LABEL-TYPE:TOPS-20 switch. In addition, the files that you read from or write to such a labeled tape must be in 36-bit format, and they must not have the ;FORMAT attribute as part of their specification.

Warnings

POP Command Cancels Unsatisfied Mount Requests

If you have given a PUSH command to obtain a new level of TOPS-20 and then give a MOUNT command within that new level, a subsequent POP command will cancel your mount request. However, if the specified structure or tape set has already been mounted, it will remain mounted despite your POP command.

/DENSITY Switch Has Limited Effect for Unlabeled Tapes

The /DENSITY switch, when given in a MOUNT command for an unlabeled tape, ensures only that your tape set will be mounted on a drive that supports the specified density. It does not ensure that the tape set will be read or written at this density. To specify the density at which unlabeled tapes are to be read and written, give the SET TAPE DENSITY command.

Effect on Memory and Terminal

The MOUNT command does not affect memory, and, if you have included the /NOWAIT switch, leaves your terminal at TOPS-20 command level. If you have not given the /NOWAIT switch, your terminal waits until the system has processed your request, or until you give a CTRL/C to return to TOPS-20 command level. This CTRL/C does not cancel your request.

MOUNT (Cont.)

Related Commands

CANCEL — for withdrawing mount requests before they are processed.

DISMOUNT — for giving up access to a particular tape drive or disk drive

INFORMATION AVAILABLE DEVICES — for finding out just the names of structures available for mounting (these are listed after DSK and PS, and before the line pr.inters (LPT, LPT0, etc.))

INFORMATION MOUNT-REQUESTS — for finding out information about pending mount requests for structures and tape sets, and about currently mounted tape sets

INFORMATION STRUCTURE — for finding out information about currently mounted structures

INFORMATION VOLUMES — for finding out the volids of all mounted volumes (including newly created volumes) of a tape set

SET TAPE commands — for establishing job-wide defaults for tape density, format, parity, and record length.

Examples

1. Mount a structure (it is already physically mounted).

```
@MOUNT STRUCTURE SNARK:
Structure SNARK: mounted
@
```

2. Mount a structure that is not yet physically mounted. After completing the command, give CTRL/Cs to return to TOPS-20 command level.

```
@MOUNT STRUCTURE PYBL:
[Mount Request PYBL Queued, Request-ID 205]
[MOUNT request remaining in queue]
^C
@
```

3. Mount a structure, then give CTRL/Cs to return to TOPS-20 command level and cancel the mount request.

```
@MOUNT STRUCTURE PYBL:
[Mount Request PYBL Queued, Request-ID 136]
[MOUNT request remaining in queue]
^C
@
[1 mount request canceled]
@
```

4. Find out what structures are available for mounting (these are listed after DSK and PS and before the line printers), and mount one of these.

```
@INFORMATION AVAILABLE DEVICES
Devices available to this job:
 DSK, PS, LANG, TYM, MISC, SNARK, REL4, LPT, LPTO
 LPT1, CDR, CDP, PCDPO, FEO, FE4-15, PTY7-10
 PTY23-61, NUL, PLT, PLTO, DCN, SRV
Devices assigned to/opened by this job: TTY220
@MOUNT STRUCTURE REL4: /NOWAIT
Structure REL4: mounted
@
```

5. Find out whether the structure you want to use has already been mounted (it has not), then mount it yourself. Note that you must first enable Wheel or Operator capabilities to mount this pack, because its structure identification is PS: and you must therefore mount it under a different alias.

   Once the structure is mounted, access a directory on the structure to obtain group rights, then find out what directories and files are on the structure.

```
@INFORMATION AVAILABLE DEVICES
Devices available to this job:
 DSK, PS, LANG, UETP, NETWRK, MISC, SNARK, REL4, PACKAG, LPT
 LPTO, LPT1, CDR, CDP, PCDPO, FEO-15, PTY13-61, NUL, PLT
 PLTO, DCN, SRV
Devices assigned to/opened by this job: TTY220
@ENABLE
$MOUNT STRUCTURE LATB: /STRUCTURE-ID:PS:/REMARK:"MOUNT PACK -
ON FIRST AVAILABLE RP06 DRIVE"/NOWAIT
[Mount Request LATB Queued, Request-ID 157]
$DISABLE
@INFORMATION MOUNT-REQUESTS


Tape/Disk Mount Queue:
Volume     Status   Type   Write     Req Name   Req#   Job#   User
-------    -------  ----   -------   -------    ----   ----   ---------
MARK       MTA1     Tape   Enabled   MARK        126     60   HOVSEPIAN
TAPE       MTA3     Tape   Enabled   TAPE        148     13   WALLACE
LATB       Waiting  Disk             LATB        157     65   LATTA
There are 3 Requests in the Queue
```

```
Structure LATB: mounted
@INFORMATION STRUCTURE LATB:
Status of structure LATB:
Mount count: 1, open file count: 0, units in structure: 1
Foreign
Users who have MOUNTed LATB: LATTA
No users are ACCESSing LATB:
No users CONNECTed to LATB:
@
@
@
@ACCESS LATB:<OPERATOR>
Password:_____
@INFORMATION DIRECTORY LATB:<*>,
@@NAME-ONLY
@@
 Name LATB:<ROOT-DIRECTORY>
 Name LATB:<ACCOUNTS>
 Name LATB:<NEW-SUBSYS>
 Name LATB:<NEW-SYSTEM>
 Name LATB:<OPERATOR>
 Name LATB:<REMARKS>
 Name LATB:<SPOOL>
 Name LATB:<SUBSYS>
 Name LATB:<SYSTEM>
 Name LATB:<UETP>
 Name LATB:<UETP.LIB>
 Name LATB:<UETP.RUN>
@DIRECTORY LATB:<SYSTEM>

   LATB:<SYSTEM>
 4-CONFIG.CMD.2
   .QMD.1
 4-SETSPD.EXE.1
 BUGSTRINGS.TXT.1
 CHECKD.EXE.1
   .HLP.1
 DUMP.EXE.1
 ERRMES.BIN.1
 ERROR.SYS.1
 EXEC.EXE.1
 LPFORM.INI.1
 MAKDMP.EXE.1
 MONBCH.EXE.1
 MONBIG.EXE.1
 MONITR.EXE.1
 MON ^O...
@
```

6. Mount a one-volume magnetic tape, labeled or unlabeled.

```
@MOUNT TAPE DAY:
[Mount Request DAY Queued, Request-ID 93]
[Tape set DAY, volume DAY mounted]
[DAY: defined as MT3:]
@
```

7. Ask that a new tape set be created for you from scratch tapes, and copy some files to it. Before dismounting the tape set, find out the volids of the tape volumes you were assigned.

```
@MOUNT TAPE LAT: /SCRATCH/LABEL-TYPE:TOPS-20
[Mount Request LAT Queued, Request-ID 104
[Tape set LAT, volume LAT mounted]
[LAT: defined as MT3:]
@COPY ON20A-11*.SYS LAT:
 DN20A-11A.SYS.1 => MT3:DN20A-11A.SYS.131071 [OK]
 ON20A-11B.SYS.1 => MT3:ON20A-11B.SYS.131071 [OK]
 DN20A-11C.SYS.1 => MT3:ON20A-11C.SYS.131071 [OK]
@INFORMATION VOLUMES LAT:
Volumes of tape set LAT: 01P02,00L16
@DISMOUNT TAPE LAT:
[Tape dismounted, logical name LAT: deleted]
@
```

8. Find out if any tape drives can be used without giving the MOUNT command (any such drives will be of the form MTAn). Assign one of these and use the PLEASE program to ask the operator to mount your (unlabeled) tape on this drive. Set the necessary tape parameters, position the tape, and copy a file from tape to the line printer. Then give up the resources you have been using.

```
@INFORMATION AVAILABLE DEVICES
Oevices available to this Job:
 OSK, PS, LANG, TYM, MISC, SNARK, REL4, MTA5, LPT, LPTO, LPT1
 CDR, COP, PCDPO, FEO, FE4-15, PTY23-61, NUL, PLT
 PLTO, DCN, SRV
Oevices assigned to/opened by this Job: TTY220
@ASSIGN MTA5:
@PLEASE
PLEASE>MESSAGE
Enter Text and Terminate with ^Z
PLEASE MOUNT MY TAPE NAMEO UNLBLD IN READ-ONLY MOOE ON MTA5:,
WHICH I HAVE ASSIGNED TO MY JDB. MTA5: IS A 7-TRACK ORIVE
THAT SUPPORTS TAPE DENSITIES OF 800 BPI, CORRECT?
^Z[Operator Notified at 16:35:20]
PLEASE>EXIT
@SET TAPE OENSITY 800
@SET TAPE RECORO-LENGTH 128
@REWINO MTA5:
@SKIP MTA5: 4 FILES
@COPY MTA5: LPT:
 MTA5: => LPT: [DK]
@UNLOAO MTA5:
@DEASSIGN MTA5:
@
```

MOUNT (Cont.)

9. Perform the same task using the same volume of tape as in the previous example by using the MOUNT command. Note that you still cannot specify a particular tape file by name when the tape is an unlabeled tape.

```
@MOUNT TAPE UNLBLD: /LABEL-TYPE:UNLABELED/DENSITY:800/DR-
IVE-TYPE:7-TRACK
[Mount Request UNLBLD Queued, Request-ID 128]
[Tape set UNLBLD, volume UNLBLD mounted]
[UNLBLD: defined as MT3:]
@INFORMATION MOUNT-REQUESTS/USER

Tape/Disk Mount Queue:
Volume    Status   Type    Write     Req Name   Req#   Job#   User
-------  -------   ----   -------   --------   ----   ----   ------
UNLBLD     MTA4    Tape   Locked    UNLBLD      128     55    LATTA
There is 1 Request in the Queue
@REWIND UNLBLD:
@SKIP UNLBLD: 4 FILES
@COPY UNLBLD: LPT:
 MT3:..4 => LPT: [OK]
@DISMOUNT TAPE UNLBLD:
[Tape dismounted, logical name UNLBLD: deleted]
@
```

10. Mount a labeled tape containing the same files as in the previous two examples, and perform the same task. Note that you need not specify tape parameters in this MOUNT command, as this information is present in the tape labels and is read automatically. Also, the system ensures that the correct volume of tape is used. Finally, you can specify the tape file by name when using labeled tapes.

```
@MOUNT TAPE LBLD: /LABEL-TYPE:ANSI/VOLIDS:00115
[Mount Request LBLD Queued, Request-ID 133]
[Tape set LBLD, volume 00115 mounted]
[LBLD: defined as MT3:]
@INFORMATION MOUNT-REQUESTS/USER

Tape/Disk Mount Queue:
Volume    Status   Type    Write     Req Name   Req#   Job#   User
-------  -------   ----   -------   --------   ----   ----   ------
00115     MTA0     Tape    Locked   LBLD         133     55   LATTA
There is 1 Request in the Queue
@REWIND LBLD:
@COPY LBLD:COMPR.BRN LPT:
 MT3:COMPR.BRN.13107 => LPT:COMPR [OK]
@DISMOUNT TAPE LBLD:
[Tape dismounted, logical name LBLD: deleted]
@
```

11. Mount a two-volume tape set (using the NOUNLOAD switch to simplify volume changes) and overwrite any existing files with new files. Then rewind the tape set. Give various INFORMATION commands as you proceed, to verify logical name and device assignments and to determine whether new volumes have been written.

```
@MDUNT TAPE LAT: /WRITE-ENABLED/NDUNLOAD/NOWAIT/VOL-
IDS:DBL01, DBL02
[Mount Request LAT Queued, Request-ID 19]
[Tape set LAT, volume DBL01 mounted]
[LAT: defined as MT0:]
@INFDRMATIDN MDUNT-REQUESTS /USER

Tape/Disk Mount Queue:
Volume     Status     Type   Write    Req Name  Req#  Job#  User
--------   --------   ----   -------  --------  ----  ----  ------
DBL01      MTA1       Tape   Enabled  LAT         19     7  LATTA
There is 1 Request in the Queue

@INFDRMATION AVAILABLE DEVICES
Devices available to this job:
 DSK, PS, LANG, SNARK, NTWDRK, REL4, MISC, PACKAG, MTA5
 MT0, LPT, LPT0, LPT1, CDP, PCDP0, FE0, FE2-15, PTY13-61
 NUL, PLT, PLT0, DCN, SRV
Devices assigned to/opened by this job: MT0, TTY217
@INFDRMATIDN LOGICAL-NAMES JDB
LAT: => MT0:
SYS: => DSK:,SYS:
@REWIND LAT: /ENTIRE-VDLUME-SET
@COPY HLP:*.HLP LAT:
 PS:<HELP>ACCT20.HLP.1 => MT0:ACCT20.HLP.131071 [OK]
 PS:<HELP>ACCTPR.HLP.1 => MT0:ACCTPR.HLP.131071 [OK]
   .
   .
 PS:<HELP>WAIT.HLP.2 => MT0:WAIT.HLP.131071 [OK]
 PS:<HELP>WATCH.HLP.6 => MT0:WATCH.HLP.131071 [OK]
@INFDRMATIDN MDUNT-REQUESTS /USER

Tape/Disk Mount Queue:
Volume     Status     Type   Write    Req Name  Req#  Job#  User
--------   --------   ----   -------  --------  ----  ----  ------
DBL02      MTA3       Tape   Enabled  LAT         19     7  LATTA
There is 1 Request in the Queue

@INFDRMATIDN VDLUMES LAT:
Volumes of tape set LAT: DBL01,DBL02
@REWIND LAT: /ENTIRE-VOLUME-SET
@INFDRMATIDN MDUNT-REQUESTS /USER

Tape/Disk Mount Queue:
Volume     Status     Type   Write    Req Name  Req#  Job#  User
--------   --------   ----   -------  --------  ----  ----  ------
DBL01      MTA1       Tape   Enabled  LAT         19     7  LATTA
There is 1 Request in the Queue

@
```

12. (For privileged users only.) Enable your capabilities and call the OPR program, then give the PUSH command to OPR. (This action puts you at TOPS-20 command level, but allows you also to see the OPR messages caused by your TOPS-20 commands.) Repeat the write operations of the previous example, then dismount the tape set and exit from the OPR program. Notice that, because of the /NOUNLOAD switch in your original MOUNT command, both volumes of your tape set remain mounted on their drives. Therefore, you can mount the tapes again without operator assistance.

```
@ENABLE
$OPR
OPR>PUSH

 TDPS-20 Command processor 4(553)
@REWINO LAT: /ENTIRE-VDLUME-SET
@COPY HLP:*.* LAT:
 PS:<HELP>ACCT20.HLP.1 => MTO:ACCT20.HLP.131071 [OK]
 PS:<HELP>ACCTPR.HLP.1 => MTO:ACCTPR.HLP.131071 [OK]
   .
   .
   .
 PS:<HELP>CHKPNT.HLP.1 => MTO:CHKPNT.HLP.131071
15:11:55              --Tape Drive Released By User--
                     MTA1: Volume DBL01 Remaining mounted on drive

15:11:57              --MTA3: Given To Request 19--
                     Volume DBL02 now in use by
                     User LATTA, Job 7, Terminal 217
 [DK]
 PS:<HELP>CDBOOT.HLP.6 => MTO:COBOOT.HLP.131071 [OK]
   .
   .
   .
 PS:<HELP>WAIT.HLP.2 => MTO:WAIT.HLP.131071 [OK]
 PS:<HELP>WATCH.HLP.6 => MTO:WATCH.HLP.131071 [OK]
@INFORMATION VOLUMES LAT:
Volumes of tape set LAT: DBL01,DBL02
@INFORMATION MOUNT-REQUESTS /USER

Tape/Oisk Mount Queue:
Volume     Status     Type    Write     Req Name    Req#   Job#   User
-------   --------    ----   -------    --------    ----   ----   ------
OBL02     MTA3        Tape   Enabled    LAT           19      7   LATTA
There is 1 Request in the Queue

@REWINO LAT: /ENTIRE-VOLUME-SET

15:14:51              --Tape Orive Released By User--
                     MTA3: Volume OBL02 Remaining mounted on drive

15:14:51              --MTA1: Given To Request 19--
                      Volume OBL01 now in use by
                      User LATTA, Job 7, Terminal 217
```

```
@DISMOUNT TAPE LAT:
[Tape dismounted, logical name LAT: deleted]

15:15:21          --Tape Drive Released By User--
                  MTA1: Volume DBL01 Remaining mounted on drive

@POP
OPR>EXIT
$DISABLE
@
```

13. Mount the same tape set as in the previous examples, but ask the operator to specify the volids. Use the PLEASE program to help you.

```
@MOUNT TAPE LAT: /WRITE-ENABLED/NOUNLOAD/NOWAIT/OPERATOR
[Mount Request LAT Queued, Request-ID 197]
@PLEASE
PLEASE>MESSAGE
Enter Text and Terminate with ^Z
PLEASE ENTER THE VOLIDS OF MY TAPE SET LAT: FOR
REQUEST 197. THEY ARE RECORDED IN YOUR TAPE
LIBRARY CATALOG. THANKS.
^Z[Operator Notified at 12:59:52]
PLEASE>EXIT
@INFORMATION MOUNT-REQUESTS /USER

Tape/Disk Mount Queue:
Volume     Status    Type   Write     Req Name   Req#   Job#   User
-------   -------    ----  -------   --------   ----   ----   ------
DBL01     Waiting    Tape  Enabled   LAT         197     65   LATTA
There is 1 Request in the Queue

@
```

PLOT

Function

The PLOT command places requests in a plotter output queue.

Format

```
@PLOT (FILES) /switch(es) filespec/switch(es),...
```

where

switches are keywords, chosen from the list below, indicating your choice of PLOT command options. These switches are of two kinds: job switches and file switches.

Job switches apply to all files specified in the command, no matter where you give the switches.

File switches have different effects depending on their positions in the command line: placed before all files in the command, they act as defaults for all; otherwise they affect only the nearest preceding file.
Defaults are shown in the list of switches

filespec is the specification of a file you wish to plot. You can use wildcard characters (% and *) to specify more than one file.

,... means that, after a comma, you can give more arguments of the form already shown

Summary of PLOT Command Switches (defaults in boldface)

Job Switches
(affecting the entire command)

/ACCOUNT:accounnt	**Default** account - your current account
/AFTER:date and/or time	
/DESTINATION-NODE:node name	
/FORMS:forms name	**Default** forms name - NORMAL
/GENERIC	
/JOBNAME:6-character name	**Default** name - first six characters of first filename in request
/LIMIT:n	**Default** n - calculated from length of files
/NOTE:12-character message	
YES /NOTIFY:NO	
/PRIORITY:n	**Default** n - 10
/SEQUENCE:n	
/UNIT:octal number	
/USER:user name	

File Switches
(affecting only the nearest preceding file,
unless placed before all filespecs)

/COPIES:n	Default n - 1
/DELETE	Default for files of type .LST
/HEADER	
ASCII	
/MODE:BINARY	
IMAGE	
/NOHEADER	
/PRESERVE	Default for all files except those of type .LST

PLOT Command Switches

Job Switches
(affecting the entire command)

/ACCOUNT:account

specifies the account of 39 or fewer characters to charge for your plotting request. This account must be valid for your user name.
Default account - your current account. Check with INFORMATION JOB-STATUS.

/AFTER:date and/or time, or
day of week (or TODAY) and/or time

ensures that the job will not be plotted until after the date and/or time specified. NOV-12-79 and 18:00 illustrate two arguments to this switch. If you give both date and time, separate them with a space. When given alone, the time may be preceded by a plus sign (+), which will delay processing by the indicated length of time from the present.

Alternatively, you can give a day of the week (e.g., MONDAY) or TODAY as argument; then the job will not be plotted until the beginning of the following day. If you follow this argument with a plus sign and a time, the job will be further delayed by this amount.

PLOT Command Switches (Cont.)

/DESTINATION-NODE:node name:: specifies the DECnet network node on whose plotter your request is to be satisfied. The node name must be of six or fewer characters and must be followed by two colons (::).

/FORMS:forms name specifies, in six or fewer characters, the forms (determining the size of banner, header, and trailer sections; the paper color, width, and weight; the number of plotter steps per inch, location of the origin for plotted data, etc.) to use for the plotting job. Using this switch may delay processing until the operator can mount the proper forms. Note that your installation may provide a different default argument to this switch.

Default forms name - NORMAL

/GENERIC allows any plotter to be used for filling the request; use this switch to override a previous /UNIT switch.

Default

/JOBNAME:name assigns a name (of six or fewer characters) to the plotting job

Default name - first six characters of first filename in the request

/LIMIT:n places a limit of n minutes of plotter time on the output of the plotting job

Default limits, usually adequate, are computed from the size of the files you want plotted

/NOTE:message labels the header section of output, i.e., the section displaying the jobname, with a message or notation of up to 12 characters. The message must be enclosed in double quotation marks if it contains spaces or non-alphanumeric characters.

PLOT Command Switches (Cont.)

YES
/NOTIFY:NO

tells the system whether to send a message to your terminal when the request has been satisfied
Default argument - NO
Default argument (if switch is given) - YES

/PRIORITY:n

assigns a number n, reflecting the urgency of the plot request. This n must be from 1 to 63, with larger numbers receiving earlier treatment. Note that for non-privileged users the maximum priority that can be specified is lower (usually 20), and that your installation may provide a different value both for this maximum and for the default priority.
Default n - 10

/SEQUENCE:n

specifies sequence number n for the printing request, which you can use when modifying or canceling the request

/UNIT:octal number

directs your request to the plotter of the specified octal unit number

/USER:user name

specifies the user who is to be the owner of the plot request. For privileged users only.

File Switches
(affecting only the nearest preceding file, unless placed before all file specifications)

/BEGIN:n

starts the plotting at page n of the file
Default n - 0

/COPIES:n

requests that n copies of the file be plotted; n must be less than or equal to 62.
Default n - 1

/DELETE

deletes the file after plotting
Default for files of type .LST

/HEADER

causes a header section containing the jobname to be produced before the file itself is plotted
Default

PLOT Command Switches (Cont.)

      ASCII
/MODE:BINARY
      IMAGE

designates the mode for plotting the file. ASCII treats each word of a disk file as five seven-bit bytes, and truncates each byte to six bits before plotting it. BINARY treats each word as six six-bit bytes, each of which is plotted without modification. IMAGE is the same as BINARY.

/NOHEADER

prevents the production of a header section before the file

/PRESERVE

saves the file after plotting
Default for all files except those of type .LST

Output

Jobname, Request ID, Limit, Number of Input Files

As soon as you complete a valid PLOT command, the system responds by printing, on your terminal, the jobname, request ID number, the limit in minutes of plotter time assigned to the request, and the number of input files in the request.

Characteristics

Ordinary Operation - No Switches

For most purposes you can use the PLOT command with just a series of filespecs for arguments.

Switch Defaults Set by System Manager

The defaults shown in the list of switches are correct for most user sites. However, your system manager can change some of those default settings. The switches most commonly affected are: /FORMS, /HEADER and /NOHEADER, /LIMIT, and /PRIORITY.

Hints

Using SET DEFAULT PLOT

If there are switches that you always or usually supply when using PLOT, give the SET DEFAULT PLOT command to establish them as defaults (at the current TOPS-20 command level) for the remainder of your terminal session. The switches will then behave as if you had typed them directly after the command name. You can supersede any of these default switches by actually supplying the switch, with another value, when you give the PLOT command. Put SET DEFAULT PLOT into a file of specification COMAND.CMD in your log-in directory if you want these default switches to be in effect for all levels of future terminal sessions as well.

Special Cases

/SPOOLED-OUTPUT Switch

You can give the special switch, /SPOOLED-OUTPUT, as sole argument to the PLOT command. This causes any spooled output accumulated so far during your terminal session to be placed in a plotter queue immediately, rather than at log-out time. The /SPOOLED-OUTPUT switch is useful only if the SET SPOOLED-OUTPUT DEFERRED command is in effect. Programs that you run (especially FORTRAN programs) create spooled output for the plotter, or you can create it directly by giving the command, COPY filespec PLT:.

Effect on Memory and Terminal

The PLOT command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

CANCEL	for withdrawing PLOT requests
INFORMATION OUTPUT-REQUESTS	for examining requests in the output queues
MODIFY	for changing PLOT requests before processing has begun
SET DEFAULT PLOT	for establishing default switches for subsequent PLOT commands.

PLOT (Cont.)

Examples

1. Plot a file.

```
@PLOT CNTR.MED
[Job CNTR Queued, Request-ID 91, Limit 2]
@
```

2. Send all files having a four-character file type ending in "CTH" to the plotter. Assign a jobname to the request, and ensure they are not printed until tomorrow. Check for the request in the output queues, and then cancel it.

```
@PLOT *.CTH /JOBNAME:HATCH/AFTER:TODAY
[Job HATCH Queued, Request-ID 94, Limit 3, 3 Files]
@INFORMATION OUTPUT-REQUESTS

Plotter Queue:
Job Name  Req#  Limit  User
--------  ----  -----  -----------
  CNTR     91      2.  LAUDERDALE
  HATCH    94      3   ASHLEY /After:21-Jul-79 00:00
There are 2 Jobs in the Queue (None in Progress)

@CANCEL PLOT 94
[1 Job Canceled]
@
```

POP

Function

The POP command terminates the current level of TOPS-20 and returns you to its superior process.

Format

```
@POP (COMMAND LEVEL)
```

Characteristics

POP the Opposite of PUSH

You can do one and only one POP command for every previous PUSH command. Giving too many POP commands will cause an error message to be printed on your terminal.

Job Parameters Affected by POP

As soon as you complete a valid POP command at some level of TOPS-20, you give up the copy of memory for that level of TOPS-20 and any program you were running. Any defaults established at that level (e.g., default filespecs for LOAD-class and EDIT-class commands, defaults specified by SET DEFAULT commands) are cancelled as well. If POP returns you to a higher level of TOPS-20, all these parameters revert to any values established at that higher level.

Special Cases

Returning to Other Programs With POP

The POP command usually returns you to the level of TOPS-20 from which you gave a previous PUSH command. But a few system programs, e.g., PTYCON and OPR, also allow you to give PUSH to get a new level of TOPS-20. Giving the POP command to this level of TOPS-20 returns you `to that program.

Effect on Memory and Terminal

The POP command clears memory, terminates the current level of TOPS-20, and returns your terminal to the previous TOPS-20 command level (but see Special Cases, above). Memory for the previous TOPS-20 command level is not affected by this action.

POP (Cont.)

Related Commands

CONTINUE	for resuming execution of a program in memory
PUSH	for obtaining a new level of TOPS-20

Examples

1. Give the POP command to return to a higher level of the TOPS-20 command processor (EXEC).

```
@POP
@
```

2. Run a program and halt it with CTRL/Cs. Give a CONTINUE STAY command to resume its execution, and then the PUSH command for a new level of TOPS-20. Run another program at this lower level, then use the POP command to return to the first level; in this case you return before receiving the final message of the first program.

```
@RUN DMN

^C
@CONTINUE STAY
@PUSH

 TOPS-20 Command processor 4(555)
@RUN TESTF1

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.03 ELAPSED TIME: 0:72
EXIT
@POP
EXIT
@
```

PRINT

Function

The PRINT command places requests in a line printer output queue.

Format

```
@PRINT (FILES) /switch(es) filespec/switch(es),...
```

where

switches — are keywords, chosen from the list below, indicating your choice of PRINT command options. These switches are of two kinds: job switches and file switches.

Job switches apply to all files specified in the command, no matter where you give the switches.

File switches have different effects depending on their positions in the command file: placed before all files in the command, they act as defaults for all; otherwise they affect only the nearest preceding file.

Defaults are shown in the list of switches

filespec — is the specification of a file you wish to print. You can use wildcard characters (% and *) to specify more than one file.

,... — means that, after a comma, you can give more arguments of the form already shown

PRINT (Cont.)

Summary of PRINT Command Switches (defaults in boldface)

Job Switches
(affecting the entire command)

/ACCOUNT:account	Default account - your current account
/AFTER:date and/or time	
/DESTINATION-NODE:node name	
/FORMS:forms name	Default forms name - NORMAL
/GENERIC	
/JOBNAME:6-character name	Default name - first six characters of first filename in request
/LIMIT:n	Default n - calculated from length of files
/LOWERCASE	
/NOTE:12-character message	
YES /NOTIFY:NO	
/PRIORITY:n	Default n - 10
/SEQUENCE:n	
/UNIT:octal number	
/UPPERCASE	
/USER:user name	

File Switches
(affecting only the nearest preceding file,
unless placed before all filespecs)

/BEGIN:n	Default n - 0
/COPIES:n	Default n - 1
/DELETE	Default for files of type .LST
ASCII COBOL /FILE:ELEVEN FORTRAN	Default for files of type .DAT only
/HEADER	
ARROW ASCII /MODE:OCTAL SUPPRESS	
/NOHEADER	
/PRESERVE	Default for all files except those of type .LST
/REPORT:12-character title	
SINGLE /SPACING:DOUBLE TRIPLE	

PRINT Command Switches

Job Switches
(affecting the entire command)

/ACCOUNT:account

specifies the account of 39 or fewer characters to charge for your printing request. This account must be valid for your user name.

Default account - your current account (check with INFORMATION JOB-STATUS)

/AFTER:date and/or time, or

day of week (or TODAY) and/or time

ensures that the job will not be printed until after the date and/or time specified. NOV-12-79 and 18:00 illustrate two arguments to this switch. If you give both date and time, separate them with a space. When given alone, the time may be preceded by a plus sign (+), which will delay processing by the indicated length of time from the present.

Alternatively, you can give a day of the week (such as, MONDAY) or TODAY as argument; then the job will not be printed until the beginning of the following day. If you follow this argument with a plus sign and a time, the job will be further delayed by this amount.

/DESTINATION-NODE:node name::

specifies the DECnet node or IBM remote job entry (RJE) station on whose line printer your request is to be printed. The node name must be of six or fewer characters and must be followed by two colons (::). You can use this switch to either send output to an RJE station or redirect it from a DECnet RJE station. However, you cannot send output from one DECnet host system to another by using this switch.

PRINT (Cont.)

PRINT Command Switches

Job Switches
(affecting the entire command)

/FORMS:forms name

specifies, in six or fewer characters, the forms (determining the number of banner, header, and trailer pages; the paper color, width, and weight; vertical format, carriage control tape, etc.) to use for the printing job. Using this switch may delay processing until the operator can mount the proper forms. Note that your installation may provide a different default argument to this switch.

Default forms name - NORMAL

/GENERIC

allows any printer, either upper or lowercase, and of any unit number, to be used for satisfying the request. Use this switch to override a previous /UPPERCASE, /LOWERCASE, or /UNIT switch.

Default

/JOBNAME:name

assigns a name (of six or fewer characters) to the printing job

Default name - first six characters of first filename in the request

/LIMIT:n

places a limit of n pages on the output of the printing job

Default limits, usually adequate, are computed from the size of the files you want printed

/LOWERCASE

directs the job to a line printer that can print both uppercase and lowercase characters

/NOTE:message

labels the header page of output, i.e., the page displaying the jobname, with a message or notation of up to 12 characters. The message must be enclosed in double quotation marks if it contains spaces or non-alphanumeric characters.

PRINT Command Switches (Cont.)

YES
/NOTIFY:NO

tells the system whether to send a message to your terminal when the request has been satisfied

Default argument - NO

Default argument (if switch is given) - YES

/PRIORITY:n

assigns a number n, reflecting the urgency of the print request. This n must be from 1 to 63, with larger numbers receiving earlier treatment. Note that for non-privileged users the maximum priority that can be specified is lower (usually 20), and that your installation may provide a different value both for this maximum and for the default priority.

Default n - 10

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PRINT Command Switches (Cont.)

/SEQUENCE:n — specifies sequence number n for the printing request, which you can use when modifying or canceling the request

/UNIT:octal number — directs your request to the line printer of the specified octal unit number

/UPPERCASE — directs the job to a line printer that uses only uppercase characters

/USER:user name — specifies the user who is to be the owner of the print request. For privileged users only.

File Switches
(affecting only the nearest preceding file,
unless placed before all file specifications)

/BEGIN:n — starts the printing at page n of the file
Default n - 0

/COPIES:n — requests that n copies of the file be printed; n must be less than or equal to 62.
Default n - 1

/DELETE — deletes the file after printing
Default for files of type .LST

/FILE:ASCII, COBOL, ELEVEN, FORTRAN — specifies that the file consists of ASCII text, or COBOL SIXBIT text; or (ELEVEN) contains four eight-bit bytes in each 36-bit word - for emulating paper tape punch only; or is FORTRAN ASCII text, where column 1 of each line is interpreted as a carriage control character.
Default - ASCII (except for files of type .DAT, for which the default is FORTRAN)

/HEADER — causes header pages containing the jobname to be printed before the file itself
Default

PRINT (Cont.)

PRINT Command Switches (Cont.)

```
       ARROW
       ASCII
/MODE:OCTAL
       SUPPRESS
```

designates the mode for printing the file. ARROW prints the file literally, but denotes each control character by an up-arrow (^) and the character, except for the following, which are printed literally: carriage return, linefeed, horizontal tab, vertical tab, and formfeed. ASCII prints the file literally, without omissions or substitutions.

OCTAL prints each word in the file as unsigned octal integers; 3 groups of 128 words (8 rows of 16 columns each) appear on a standard line printer page. SUPPRESS prints the file without any blank lines, causing all vertical format characters (CTRL/K, CTRL/L, CTRL/Q, CTRL/R, CTRL/S, and CTRL/T) to be converted to CRLFs (carriage return/linefeeds), and then interpreting multiple occurrences of CRLFs as a single CRLF.

Default - ARROW

/NOHEADER

prevents the printing of header pages before the file

/PRESERVE

saves the file after printing

Default for all files except those of type .LST

/REPORT:title

scans your files and prints only those lines whose first characters are the title you give. This title may contain up to 12 characters (including the quotation marks that must enclose the title if it contains spaces). The switch is used along with the COBOL report writer.

```
          SINGLE
/SPACING:DOUBLE
          TRIPLE
```

determines the spacing between lines in the printout

Default - SINGLE

Output

Jobname, Request ID, Limit, Number of Files

As soon as you complete a valid PRINT command, the system responds by printing, on your terminal, the jobname, request ID number, the limit in pages of output assigned to the request, and the number of files in the request.

Characteristics

Ordinary Operation - No Switches

For most purposes you can use the PRINT command with just a series of filespecs for arguments.

Switch Defaults Set by System Manager

The defaults shown in the list of switches are correct for most user sites. However, your system manager can change some of those default settings. The switches most commonly affected are: /FORMS, /HEADER and /NOHEADER, /LIMIT, and /PRIORITY.

Hints

Using SET DEFAULT PRINT

If there are switches that you always or usually supply when using PRINT, give the SET DEFAULT PRINT command to establish them as defaults (at the current TOPS-20 command level) for the remainder of your terminal session. The switches will then behave as if you had typed them directly after the command name. You can supersede any of these default switches by actually supplying the switch, with another value, when you give the PRINT command. Put SET DEFAULT PRINT into a file of specification COMAND.CMD in your log-in directory if you want these default switches to be in effect for all levels of future terminal sessions as well.

Special Cases

/SPOOLED-OUTPUT Switch

You can give the special switch, /SPOOLED-OUTPUT, as sole argument to the PRINT command. This causes any spooled output accumulated so far during your terminal session to be placed in a line printer queue immediately, rather than at log-out time. The /SPOOLED-OUTPUT switch is useful only if the SET SPOOLED-OUTPUT DEFERRED command is in effect. Programs that you run (especially FORTRAN programs) create spooled output for the printer, or you can create it directly by writing to device LPT: (e.g., by giving the command, COPY filespec LPT:), or giving a CREF command.

Effect on Memory and Terminal

The PRINT command does not affect memory and leaves your terminal at TOPS-20 command level.

PRINT (Cont.)

Related Commands

CANCEL	for withdrawing PRINT requests
INFORMATION OUTPUT-REQUESTS	for examining requests in the output queues
MODIFY	for changing PRINT requests before processing has begun
SET DEFAULT PRINT	for establishing default switches for subsequent PRINT commands

Examples

1. Print two of your files.

```
@PRINT 4-UPED.TXT, CMPTN.TXT
[Job 4-UPED Queued, Request-ID 302, Limit 200, 2 Files]
@
```

2. Print three files, assigning a jobname and a note for the header page; postpone the printing. Make 4 copies of one of the files, and double-space another one.

```
@PRINT /JOBNAME:COMFIL/NOTE:CONFIDENTIAL/AFTER:12-DEC-79 FOO
.CTL, HOLMAX.CTL/COPIES:4, INSIDE.RNO/SPACING:DOUBLE
[Job COMFIL Queued, Request-ID 306, Limit 27, 3 Files]
@INFORMATION OUTPUT-REQUESTS /USER/ALL

Printer Queue:
Job Name  Req#   Limit  User
--------  ----   -----  ------
  COMFIL   306      27  LATTA  /After:12-Dec-79  0:00
         /Note:CONFIDENTIAL    /Seq:1865
There is 1 Job in the Queue (None in Progress)
@
```

3. Print a job in a hurry, by assigning a high priority and skipping the header and first five pages. Print 10 copies of the first file, and 18 of the second.

```
@PRINT /JOBNAME:RUSH /PRIORITY:60/NOHEADER/BEGIN:5/COPIES:1
0 RFM.CTL, HOLMAX.CTL/COPIES:18
[Job RUSH Queued, Request-ID 312, Limit 27, 2 Files]
@INFORMATION OUTPUT-REQUESTS /USER/ALL

Printer Queue:
Job Name  Req#   Limit  User
--------  ----   -----  ------
* RUSH    312       27  LATTA   On Unit:0   /Prio:20
         /Seq:1870
   Started at 15:00:11, printed 10 of 27 pages
COMFIL    306       27  LATTA   /After:12-Dec-79  0:00
         /Note:CONFIDENTIAL    /Seq:1865
There are 2 Jobs in the Queue (1 in Progress)

@
```

PUNCH

Function

The PUNCH command places requests in a card punch or paper tape punch output queue.

Format

```
@PUNCH (ONTO) medium (FILES) /switch(es) filespec/switch(es),...
```

where

medium — is the name of the medium on which you want to punch your file(s). It can be either

CARDS
or
PAPER-TAPE

switches — are keywords, chosen from the list below, indicating your choice of PUNCH command options. These switches are of two kinds: job switches and file switches.

Job switches apply to all files specified in the command, no matter where you give the switches.

File switches have different effects depending on their positions in the command line: placed before all files in the command, they act as defaults for all; otherwise they affect only the nearest preceding file.

Defaults are shown in the list of switches

filespec — is the specification of a file you wish to punch. You can use wildcard characters (% and *) to specify more than one file.

,... — means that, after a comma, you can give more arguments of the form already shown

Summary of PUNCH Command Switches (defaults in boldface)

Job Switches
(affecting the entire command)

/ACCOUNT:account	Default account - your current account
/AFTER:date and/or time /DESTINATION-NODE:node-name	
/FORMS:forms name	Default forms name - NORMAL
/GENERIC	
/JOBNAME:6-character name	Default - first six characters of first filename in request
/LIMIT:n	Default n - calculated from length of files
/METERS:n (PAPER-TAPE only)	Default n - calculated from length of files
/NOTE:12-character message	
/NOTIFY: YES NO	
/PRIORITY:n	Default n - 10
/SEQUENCE:n	
/UNIT:octal number	
/USER:user name	

File Switches
(affecting only the nearest preceding file, unless placed before all filespecs)

/COPIES:n	Default n - 1
/DELETE	Default for files of type .LST
/HEADER	
/MODE: ASCII BCD BINARY IMAGE (CARDS only)	
/MODE: ASCII BINARY IMAGE IMAGE-BINARY (PAPER-TAPE only)	
/NOHEADER	
/PRESERVE	Default for all files except those of type .LST

Job Switches
(affecting the entire command)

/ACCOUNT:account

specifies the account of 39 or fewer characters to charge for your punching request. This account must be valid for your user name.

Default account - your current account (check with INFORMATION JOB-STATUS)

/AFTER:date and/or time or

day of week (or TODAY) and/or time

ensures that the job will not be punched until after the date and/or time specified. NOV-12-79 and 18:00 illustrate two arguments to this switch. If you give both date and time, separate them with a space. When given alone, the time may be preceded by a plus sign (+), which will delay processing by the indicated length of time from the present.

Alternatively, you can give a day of the week (e.g., MONDAY) or TODAY as argument; then the job will not be punched until the beginning of the following day. If you follow this argument with a plus sign and a time, the job will be further delayed by this amount.

/DESTINATION-NODE:node name::

specifies the DECnet network node on whose card punch or paper tape punch your request is to be satisfied. The node name must of six or fewer characters and must be followed by two colons (::).

/FORMS:forms name

specifies, in six or fewer characters, the forms (determining the weight and color of card or paper stock, the size of banner, header, and trailer sections, etc.) to use for the punching job. Using this switch may delay processing until the operator can mount the proper forms. Note that your installation may provide a different default argument to this switch.

Default forms name - NORMAL

/GENERIC

allows any card punch or paper tape punch to be used for satisfying the request; use this switch to override a previous /UNIT switch.

Default

Job Switches (Cont.)

/JOBNAME:name

assigns a name (of six or fewer characters) to the punching job

Default name - first six characters of first filename in the request

/LIMIT:n

places a limit of n cards (or n feet of paper tape) on the output of the punching job

Default limits, usually adequate, are calculated from the size of the files you want punched

/METERS:n

places a limit of n meters on the output of the punching job (PAPER-TAPE only)

/NOTE:message

labels the header section of output, i.e., the section displaying the jobname, with a message or notation of up to 12 characters. The message must be enclosed in double quotation marks if it contains spaces or non-alphanumeric characters.

YES
/NOTIFY:NO

tells the system whether to send a message to your terminal when the request has been satisfied

Default argument - NO

Default argument (if switch is given) - YES

/PRIORITY:n

assigns a number n, reflecting the urgency of the punch request. This n must from 1 to 63, with larger numbers receiving earlier treatment. Note that for non-privileged users the maximum priority that can be specified is lower (usually 20), and that your installation may provide a different value both for this maximum and for the default priority.

Default n - 10

/SEQUENCE:n

specifies sequence number n for the punch request, which you can use when modifying or canceling the request

/UNIT:octal number

directs your request to the card punch or paper tape punch of the specified octal unit number

/USER:user name

specifies the user who is to be the owner of the punch request. For privileged users only.

File Switches
(affecting only the nearest preceding file,
unless placed before all file specifications)

/COPIES:n

requests that n copies of the file be punched; n must be less than or equal to 62.
Default n - 1

/DELETE

deletes the file after punching
Default for files of type .LST

/HEADER

causes a header section containing the jobname to be punched before the file itself is produced
Default

```
      ASCII
      BCD
/MODE:BINARY (CARDS only)
      IMAGE
```

designates the mode for punching the file onto cards. ASCII treats each word of a disk file as five seven-bit bytes and punches each byte into one column of the card, using the ASCII translation table for conversion into Hollerith code. BCD is the same as ASCII, except that it uses the 026 translation table. BINARY treats each group of 26 words as 78 12-bit bytes and punches each byte into one column of the card, from column 3 through column 80; column 1 contains the octal word count in rows 12 through 3 and rows 7 and 9 punched, while column 2 contains a 12-bit folded checksum. IMAGE treats each group of 27 words as 81 12-bit bytes and punches each byte into one column of the card, ignoring the eighty-first byte.

```
      ASCII
      BINARY
/MODE:IMAGE   (PAPER-TAPE only)
      IMAGE-BINARY
```

designates the mode for punching the file onto paper tape. ASCII treats each word of a disk file as five seven-bit bytes plus an even parity bit for each byte, and punches each byte into one frame of paper tape; if a vertical or horizontal tab is punched, it is followed by a rubout character, and if a formfeed is punched, it is followed by 16 null characters. BINARY treats each group of 33 words as 1 control word followed by 32 words of data, where each word (both control and data) consists of six 6-bit bytes, and punches each byte

File Switches (Cont.)

into one frame of paper tape after adding 200 (octal) to the byte; the control word consists of a folded checksum in the left half and the data word count in the right half. IMAGE treats each word of a disk file as one 8-bit byte followed by 28 zeroes, and punches each byte into one frame of paper tape. IMAGE BINARY treats each word as six 6-bit bytes, and punches each byte into one frame of paper tape after adding 200 (octal) to each byte.

/NOHEADER prevents the punching of a header section before the file

/PRESERVE saves the file after punching
Default for all files except those of type .LST

Output

Jobname, Request ID, Limit, Number of Input Files

As soon as you complete a valid PUNCH command, the system responds by printing, on your terminal, the jobname, request ID number, the output limit in number of cards or feet of paper tape assigned to the request, and the number of input files in the request.

Characteristics

Ordinary Operation - No Switches

For most purposes you can use the PUNCH command with just the medium and a series of filespecs for arguments.

Switch Defaults Set by System Managers

The defaults shown in the list of switches are correct for most user sites. However, your system manager can change some of those default settings. The switches most commonly affected are: /FORMS, /HEADER and /NOHEADER, /LIMIT, and /PRIORITY.

Hints

Using the SET DEFAULT Commands

If there are switches that you always or usually supply when using PUNCH, give the SET DEFAULT CARDS or SET DEFAULT PAPER-TAPE command to establish them as defaults (at the current TOPS-20 command level) for the remainder of your terminal session. The switches will then behave as if you had typed them directly after the command name. You can supersede any of these default switches by actually supplying the switch, with another value, when you give the PUNCH command. Put SET DEFAULT commands into a file of specification COMAND.CMD in your log-in directory if you want these default switches to be in effect for all levels of future terminal sessions as well.

Special Cases

/SPOOLED-OUTPUT Switch

You can give the special switch, /SPOOLED-OUTPUT, as sole argument to the PUNCH CARDS or PUNCH PAPER-TAPE command. This causes any spooled output accumulated so far during your terminal session to be placed in a card punch or paper tape punch queue immediately, rather than at log-out time. The /SPOOLED-OUTPUT switch is useful only if the SET SPOOLED-OUTPUT DEFERRED command is in effect. Programs that you run (especially FORTRAN programs) create spooled paper tape punch or card punch output. Or you can create it directly by giving the command, COPY filespec PTP:, or COPY filespec CDP:, respectively.

Effect on Memory and Terminal

The PUNCH command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

CANCEL	CARDS PAPER-TAPE	for withdrawing PUNCH requests
INFORMATION OUTPUT-REQUESTS		for examining requests in the output queues
MODIFY	CARDS PAPER-TAPE	for changing PUNCH requests before processing has begun
SET DEFAULT	CARDS PAPER-TAPE	for establishing default switches for subsequent PUNCH commands

PUNCH (Cont.)

Examples

1. Punch a file onto cards.

```
@PUNCH CARDS ESTMT.DAT
[Job ESTMT Queued, Request-ID 146, Limit 30]
@
```

2. Punch a file onto paper tape.

```
@PUNCH PAPER-TAPE REAUMUR.LNS
[Job REAUMU Queued, Request-ID 12, Limit 55]
@
```

3. Punch three files onto paper tape, specifying a particular paper tape punch for two of them and allowing the third to be punched on any available device.

```
@PUNCH PAPER-TAPE /UNIT:2 INDX.LTG, PON.LG4/GENERIC,-
BENNETT.TXT
[Job INDX Queued, Request-ID 149, Limit 110, 3 Files]
@
```

4. Punch a file onto paper tape, specifying that the job not begin for an hour. Check for your requests in the output queues, then cancel both of your paper tape requests.

```
@PUNCH PAPER-TAPE FDRUM.APR /AFTER:+1:00
[Job FDRUM Queued, Request-ID 150, Limit 10]
@INFORMATION DUTPUT-REQUESTS/USER
Papertape Queue:
Job Name  Req#  Limit  User
--------  ----  -----  -------
    INDX   149    110  SCARNY
   FORUM   150     10  SCARNY /After:20-Jul-79 16:20
There are 2 Jobs in the Queue (None in Progress)

Card-Punch Queue:
Job Name  Req#  Limit  User
--------  ----  -----  -------
   ESTMT   146     30  SCARNY
There is 1 Job in the Queue (None in Progress)
@CANCEL PAPER-TAPE *
[2 Jobs Canceled]
@
```

PUSH

Function

The PUSH command creates a new level of TOPS-20 inferior to the one from which you give the PUSH command.

Format

```
@PUSH (COMMAND LEVEL)
```

Characteristics

A New Level of TOPS-20

The PUSH command creates a lower TOPS-20 command level (EXEC) than you were using. The file of specification COMAND.CMD in your log-in directory is executed again, you have a fresh copy of memory and can begin giving commands as if you had just logged in. However, job-wide parameters (e.g., connected and accessed directories, logical name definitions, most parameters altered by SET commands) are unaffected by the PUSH command and retain their values from just before PUSH.

Hints

Using CONTINUE STAY With PUSH

You can use the PUSH command to run two programs at once or to do other work that requires more than one copy of memory. Simply use the CONTINUE STAY command to continue execution of your current program before using PUSH. After PUSH you can run another program or otherwise alter memory without affecting memory for the first program. See Example 2. But see also Warning, below.

Restrictions

Number of Successive PUSH commands

You can give as many pairs of PUSH and POP commands as necessary to complete your task. Although there is a limit to the number of times you can give PUSH without giving intervening POP commands, this limit is large enough (approximately 24, although smaller for a heavily loaded system) not to interfere with most applications.

PUSH (Cont.)

Withheld Log-out Capability

You can usually log out from a lower level of TOPS-20 than the one to which you logged in. By doing so, you simultaneously conclude all processes of your job. However, if a program (e.g., PTYCON) has initialized a level of the TOPS-20 command processor but has withheld log-out capability from it, you must use the POP command, followed, if necessary, by a program command to exit from the program and return to a higher level of TOPS-20, before you can log out.

Warning

Competition Between Processes

If you have two programs running at once after using CONTINUE STAY and PUSH commands (see Hints, above) they may try to access the same files at the same time. Or, TOPS-20 commands given at the lower level may be intercepted by a program running at the higher level. For a discussion of these possibilities, see the Restrictions section of the CONTINUE command description.

Effect on Memory and Terminal

The PUSH command preserves your present memory, gives you a fresh copy of memory, and leaves your terminal at a new TOPS-20 command level.

Related Commands

CONTINUE STAY	for beginning execution of a program before giving the PUSH command
POP	for returning to a previous level of TOPS-20

Examples

1. Give the PUSH command.

```
@PUSH

 TOPS-20 Command processor 4(555)
@
```

2. Run a program, and give a CTRL/C to return to TOPS-20 command level. Give a CONTINUE STAY command to resume this program's execution, and then a PUSH command for a new copy of the TOPS-20 command language. Repeat this process twice; now you have three programs running at once. In the lowest (fourth) level of your job, begin editing a file. (Note: when running more than one program in this way, be sure that they do not use the same compiler or the same data base; otherwise, competition among them could cause unpredictable situations to develop.)

```
@RUN TESTF1
^C
@CONTINUE STAY
@PUSH

 TOPS-20 Command processor 4(555)
@RUN DMN
^C
@CONTINUE STAY
@PUSH

 TOPS-20 Command processor 4(555)
@RUN PRODUK
^C
@CONTINUE STAY
@PUSH

 TOPS-20 Command processor 4(555)
@EDIT ARTIFI.CTL
Edit: ARTIFI.CTL.7
*
```

R

Function

The R command places in memory and starts an executable program.

Format

```
@R (PROGRAM) filespec/switch

where

filespec     is the file specification of any executable program
                  Default dev:<directory> - SYS:

                  Default .typ - .EXE

/switch      is    /USE-SECTION:n
                   specifies the memory section (from  0  to  37
                   octal)  in which your program is to run.  You
                   can use this switch only if your program  can
                   be contained in one section.
```

Characteristics

Necessity of R Command

Although in most cases you can run executable programs by simply typing the program name in place of a TOPS-20 command, the R command is necessary for running a program whose name is the same as a TOPS-20 command.

Hints

Defining SYS:

If you redefine logical name SYS: to be different from the system-wide definition, you should include SYS: in the search list if you want to use the R command to run system programs. For further information, refer to the section entitled, "Redefining System Logical Names," in the DEFINE command description.

Effect on Memory and Terminal

The R command clears memory and terminates the current process, then places in memory and starts the specified program, and leaves your terminal at command level in the program (if any), or at TOPS-20 command level.

Related Commands

INFORMATION LOGICAL-NAMES	for examining the definition of SYS:
RUN	for running executable user programs

Examples

1. Run the FILCOM system program.

```
@R FILCOM

*
```

2. Find out what APL programs are available in logical name SYS:. Run one of them.

```
@DIRECTORY SYS:*APL*.EXE

   PS:<FIELD-IMAGE>
 APL.EXE.1
 APLSF.EXE.1
 MAPLFL.EXE.1

 Total of 3 files
@R APL.EXE
TERMINAL..
```

RECEIVE

Function

The RECEIVE command notifies the system that you are willing to accept communication links, or advice from another user, or system messages.

Format

```
@RECEIVE argument
```

where

argument — is a keyword, chosen from the list below, naming the kind of communication you are willing to accept

RECEIVE Command Arguments

LINKS	allows communication links established by another user's TALK command
ADVICE	allows both assistance and communication links initiated by another user's ADVISE or TALK command
SYSTEM-MESSAGES	allows messages of interest to all users sent by the operator or other privileged users Default - LINKS

Hints

Typing RECEIVE During Attempted TALK

If your terminal has been set to refuse links and another user tries to talk to you by using the TALK command, both terminals will give a series of CTRL/G signals (ringing bells or high-pitched beeps) indicating the refused attempt. If you give the RECEIVE LINKS command before these signals are finished, the TALK command will succeed.

Effect on Memory and Terminal

The RECEIVE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

ADVISE	for sending commands to another user's job
INFORMATION TERMINAL-MODE	for examining your current terminal settings
REFUSE	for refusing communication links, advice, or system messages
TALK	for sending comments to another user

Examples

1. Give the RECEIVE command to accept communication links from other users.

```
@RECEIVE LINKS
@
```

2. Set your terminal to receive links, at the request (sent via the MAIL program, not shown here) of another user. Begin a communication session with this user, during which you give the RECEIVE ADVICE command also, to allow a demonstration of the UDP program. Afterwards, set your terminal again to refuse advice.

```
@RECEIVE
@
LINK FROM RENQUIST, TTY 127
@;THANKS, BUT IF YOU LET ME OO AN "AOVISE" I CAN SHOW YOU
@;HOW TO RUN THE PROGRAM BY ACTUALLY OOING IT. OKAY?
@; SURE, I’LL FIX MY SETTING.
@RECEIVE AOVICE
@AOVISE LATTA
 Escape character is <CTRL>E, type <CTRL>^? for help
 LATTA, MISC:<LATTA> Job 33 EXEC
 [Advising]
UOP
UOP>LIST/OOCUMENTATION:/CREATEO-SINCE:1-1-78 0:0
UOP>EXIT
@;YOU’LL GET A PRINTEO LISTING TOMORROW.
@;OO YOU SEE HOW I OIO IT?
@;YES, THANKS.   GOODBYE.
@
 [Advice terminated]

@REFUSE ADVICE
@
```

REENTER

Function

The REENTER command starts your currently loaded program at its alternate entry point.

Format

```
@REENTER (PROGRAM)
```

Characteristics

Using REENTER

The REENTER command starts your program at the address specified by the second word in the program's entry vector. For most programs this address is contained in location 124. Usually the REENTER and START commands start the program at the same point, but another re-entry point can be provided to avoid initialization procedures, perform error recovery, or to use the program in a different way.

Hints

Further Information

For more information about entry vectors, see the TOPS-20 Monitor Calls Reference Manual.

Effect on Memory and Terminal

The REENTER command does not affect memory and leaves your terminal at a level determined by the program.

Related Commands

GET	for placing an executable program in memory
LOAD	for loading a source or object program into memory
START	for entering a program at its normal entry point

REENTER (Cont.)

Examples

1. Give the REENTER command for your current program.

   ```
   @REENTER
   ```

2. Begin running a program, then give a CTRL/C to leave it and obtain a file. Resume execution of the program at the alternate entry point.

   ```
   @R DUMPER
   DUMPER>^C
   @ACCESS PS:<P.SPECCINI>
   Password:
   @COPY PS:<P.SPECCINI>USR.FIL
    PS:<P.SPECCINI>USR.FIL.1 => USR.FIL.1 [OK]
   @END-ACCESS PS:<P.SPECCINI>
   @REENTER
   DUMPER>
   ```

REFUSE

Function

The REFUSE command notifies the system that you are not willing to accept communication links, or advice from another user, or system messages.

Format

```
@REFUSE argument
```

where

argument is a keyword, chosen from the list below, naming the kind of communication you are not willing to accept

REFUSE Command Arguments

LINKS prevents both assistance and communication links from being established by another user's ADVISE or TALK command

ADVICE prevents assistance initiated by another user's ADVISE command

SYSTEM-MESSAGES prevents messages of general interest sent to all users by the monitor or by the operator or other privileged users

Default - LINKS and ADVICE

Hints

Typing RECEIVE During Attempted TALK

If your terminal has been set to refuse links and another user tries to talk to you by using the TALK command, both terminals will give a series of CTRL/G signals (ringing bells or high-pitched beeps) indicating the refused attempt. If you give the RECEIVE LINKS command before these signals are finished, the TALK command will succeed.

REFUSE to Safeguard Terminal Output

If you want your terminal to print a long file, say, without interference, use REFUSE LINKS and REFUSE SYSTEM-MESSAGES commands to prevent all classes of message from being received. Be sure to use the RECEIVE command afterwards to restore the previous condition of your terminal.

Special Cases

Implicit Refusal of Advice

If you give the REFUSE LINKS command, your terminal will be set to refuse advice also. However, the INFORMATION TERMINAL-MODE command may not display this setting unless you give an explicit REFUSE ADVICE command as well.

Privileged Disregard of REFUSE

A user with enabled Wheel or Operator capabilities can give the TALK or ADVISE command for any job.

Effect on Memory and Terminal

The REFUSE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION TERMINAL-MODE	for examining your current terminal settings
RECEIVE	for receiving communication links, advice, or system messages

Examples

1. Use the REFUSE command to prevent other users from advising your job.

```
@REFUSE ADVICE
@
```

2. Receive a communication link formed by another user's TALK command. Confer with him briefly, then set your terminal to refuse all classes of message over which you have control.

```
LINK FRDM RENQUIST, TTY 127
@;HELLD DAVID. CAN YOU HELP ME WITH EDIT?
@;SDRRY, PLEASE BREAK.  I'M EXPECTING PRINTOUT AND THIS
@;WILL INTERFERE.  WILL GET IN TDUCH LATER.
@;DKAY
@BREAK

@REFUSE ADVICE
@REFUSE LINKS
@REFUSE SYSTEM-MESSAGES
@
```

REMARK

Function

The REMARK command tells the system to regard the terminal input that follows as comment only.

Format

```
@REMARK (MODE)
Type remark.  End with CTRL/Z.
```

Characteristics

Ending Remarks

Until you give a CTRL/Z, the system merely displays what you type, instead of trying to interpret it as commands.

Hints

Useful During TALK or ADVISE Session

If you have already established contact with another user by a TALK or ADVISE command before giving REMARK, his terminal will also display what you type. Give the REMARK command before sending lengthy comments or demonstrating commands that you don't want to take effect.

Effect on Memory and Terminal

The REMARK command does not affect memory and leaves your terminal at remark level.

Related Commands

ADVISE	for sending commands to another user's job
TALK	for sending comments to another user

Examples

1. Give the REMARK command.

```
@REMARK
TYPE REMARK.  END WITH CTRL/Z.
```

2. Receive a communication link from another user. Give the REMARK command to speak with him. Give a CTRL/Z afterwards to end the remarks.

```
@
LINK FROM P.SPECCINI, TTY 127
@;WHERE ARE THE NOTES FROM THE LAB DEMO THIS A.M.?
@REMARK
TYPE REMARK.  END WITH CTRL/Z.
HI, PAUL.  THEY'RE IN THE LAB'S LIBRARY AREA.
THAT'S CHEM:<P-CHEM.20.NOTES>.  I DON'T KNOW
THE TITLE BUT LOOK AT THE DATES WITH A
TDIRECTORY COMMAND.  OKAY?
;YES, THANKS.  BYE
@BREAK
^Z

@
```

RENAME

Function

The RENAME command changes the specification of a file.

Format

@RENAME (EXISTING FILE) **old filespec(s)** (TO BE) new **filespec**

where

old filespec(s) — is a single file specification, or a series of them separated by commas and/or indicated by wildcard characters (% and *)

new filespec — is the new specification under which you want to store the file(s); you may include an asterisk (*) if you gave more than one old filespec.

Default new filespec - old filespec, but with a generation number higher by 1 than the highest existing generation number

Output

Status of Files

If you use recognition on the new file specification, the system prints !Old Generation!, !New Generation!, or !New File!, to describe its status.

Confirmation of Action

As each file is renamed, the sytem prints its old and new specification, and the word [Superseding] if it is replacing previous contents, and finally the word [OK]. The delay before you see this [OK] indicates how long it took to rename the file.

Characteristics

Efficiency of RENAME

The RENAME command is the fastest and most efficient means of transferring files from one specification to another within a structure, because only the file specifications have to be changed - the contents are not copied.

Hints

Specifying a New Account and Protection Number

You can specify the new file's protection number and the account to which its storage fees will be charged. Follow the new filespec with a semicolon (;) and the letter P before giving a new 6-digit protection number, and with a semicolon and the letter A before giving a new account. Ordinarily these values are set to the default file protection and current account. However, non-default protection numbers will be maintained for higher generations of existing files, unless you specify otherwise in the RENAME command that creates that higher generation.

Restrictions

Renaming Between Structures

You cannot rename a file from one structure to another, but must use the COPY command to reproduce its contents on the new structure, then the DELETE command to remove it from the old structure.

Renaming Open or Mapped Files

You cannot rename a file that is open or mapped into memory. First give the RESET command, or POP followed by RESET, if this is the case.

Renaming Archived Files

You can rename an archived file by specifying it as the first (or old) argument of a RENAME command. It will then have the second (or new) argument as its specification and will remain an archived file. However, you cannot give the specification of an archived file as the second argument of a RENAME command, as this would replace the file's contents. If you attempt to do so, the file you specify as the first argument will be renamed to a generation higher by 1 than the highest existing generation of the archived file, leaving the archived file intact.

Warning

Replacing Previous Contents of Files

If you rename a file into a specification (including generation number) that already exists, the previous contents of the new file are replaced and cannot be recovered. But see Restrictions - Renaming Archived Files, above.

RENAME (Cont.)

Effect on Memory and Terminal

The RENAME command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

COPY   for making copies of files

Examples

1. Rename a file.

```
@RENAME ATM-50.SPC ATM-50.PRL
 ATM-50.SPC.1 => ATM-50.PRL.1 [OK]
@
```

2. Use a wildcard character to rename all files of a given name.

```
@RENAME ATM-50.* 1-ATM-50.*
 ATM-50.BAK.1 => 1-ATM-50.BAK.1 [OK]
 ATM-50.PRL.1 => 1-ATM-50.PRL.1 [OK]
@
```

3. Access another user directory and transfer to it the files renamed in Example 2.

```
@ACCESS <ORBEN>
Password:______
@RENAME 1-ATM-50.* <ORBEN>
 1-ATM-50.BAK.1 => <ORBEN>1-ATM-50.BAK.1 [OK]
 1-ATM-50.PRL.1 => <ORBEN>1-ATM-50.PRL.1 [OK]
@END-ACCESS <ORBEN>
@
```

RESET

Function

The RESET command terminates the current process and all inferior processes.

Format

```
@RESET
```

Characteristics

Action of RESET

The RESET command, in addition to clearing memory for the processes it terminates, closes all files, even if mapped, opened by the current process and all of its inferiors. It simultaneously terminates all lower processes.

Effect on Memory and Terminal

The RESET command clears memory for the current process and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION FILE-STATUS	for determining which files are currently open
INFORMATION MEMORY-USAGE	for determining contents of memory

Examples

1. Give the RESET command to clear memory.

```
@RESET
@
```

RETRIEVE

Function

The RETRIEVE command restores an off-line file (magnetic tape copy of a file) to disk.

Format

```
@RETRIEVE (FILES) filespec,...
```

where

filespec — is the specification of any off-line file (archived or not, visible or invisible) to which you have access; you may include wildcard characters (% and *).

,... — means that, after a comma, you can give more arguments of the form already shown

Output

Acknowledgment of Request

As soon as you complete a valid RETRIEVE command, the system responds by printing, on your terminal, the specification of each off-line file for which you requested retrieval, followed by [OK].

Notice of Retrieval Sent to Requestor

When the files for which you have requested retrieval have been restored to their directory on disk, a message is sent to the file MAIL.TXT in your log-in directory. This message gives the complete specification of each retrieved file. Read it using the RDMAIL or MS program. Remember that, depending on how frequently your site processes retrieval requests, this message may not be sent until one or more days after your request.

Characteristics

Invisibility of Retrieved Files

If you retrieve invisible files, they will remain invisible (whether archived or not) when restored to disk. Use the SET FILE VISIBLE command to make invisible files visible. Until you do so, they will be inaccessible to most TOPS-20 commands.

Hints

Using Retrieved Archived Files

As long as a retrieved archived file is visible, you can inspect it using the TYPE or PRINT command, or list its specifications using DIRECTORY-class commands. However, you cannot add to it or change it (e.g, by using APPEND or EDIT). To make changes to a copy of a retrieved archived file, first use the COPY command to copy it to a new specification. If you wish, you can then request archival for this new file (using the ARCHIVE command) and delete the old one (using the DELETE command with the ARCHIVED subcommand). You can return an (unchanged) on-line archived file to off-line status by using the DELETE command with the CONTENTS-ONLY subcommand, or withdraw archive status from the file (i.e., make it an ordinary disk file) by using the DISCARD command.

Using Retrieved Non-archived Files

As long as a retrieved non-archived file is visible, you can use TOPS-20 commands with it as with any other disk file. The only difference is that after any command that has changed the file (e.g, EDIT), the tape copy of the file is no longer valid. This means that you cannot give the DELETE command with the CONTENTS-ONLY subcommand to return the file to off-line status.

Special Cases

Implied Retrieval Requests

If your system has enabled the "automatic retrieval-wait" feature (give the INFORMATION SYSTEM-STATUS command to find out whether it has), and the SET RETRIEVAL-WAIT command is in effect for your job, any command that attempts to use an off-line file will create an automatic retrieval request for that file. Under these conditions, commands such as TYPE or COPY for which you specify off-line files will not be executed until those files are retrieved. Implied`retrieval requests are most useful in batch jobs.

Related Commands

ARCHIVE	for requesting archival of specified files
CANCEL RETRIEVE	for canceling retrieval requests before they are filled

DELETE (with CONTENTS-ONLY subcommand)	for deleting the disk contents only of retrieved (i.e., on-line) files
DIRECTORY (with OFFLINE subcommand)	for listing the specifications of visible off-line files
DIRECTORY (with OFFLINE and INVISIBLE subcommands)	for listing the specifications of invisible off-line files
DIRECTORY (with TIMES TAPE-WRITE subcommand)	for finding out the write date of the tape copy of files
DISCARD	for giving up the tape copy of retrieved files
INFORMATION RETRIEVAL-REQUESTS	for finding out the status of retrieval requests

Effect on Memory and Terminal

The RETRIEVE command does not affect memory and leaves your terminal at TOPS-20 command level.

Examples

1. Retrieve an off-line file.

```
@RETRIEVE BRCHIVE.TXT
 BRCHIVE.TXT.1 [OK]
@
```

2. Attempt to use a file. Upon discovering that it is off-line, retrieve the file. When it has been restored to your directory, discard the tape copy of the file, and then have it printed on your terminal.

```
@TYPE FILBRK.HLP
?File is off-line: FILBRK.HLP.1
@RETRIEVE FILBRK.HLP
 FILBRK.HLP.1 [OK]
      .
      .
      .
@DISCARD FILBRK.HLP
 FILBRK.HLP.1 [OK]
@TYPE FILBRK.HLP
!THIS IS JUST A TEXT FILE TESTER.
@
```

3. Get a listing of your archived files. Retrieve one that is off line, examine it, and return it to off-line status.

```
@DIRECTORY,
@@ARCHIVE
@@

   MISC:<GOLOEN>
 ARCHEK.FIL.1
 ARCHIVE.ALSO.1;OFFLINE
   .NOT.1;OFFLINE
   .TOO.1;OFFLINE
   .ZOTH.1
 ARTEST.QIL.1
 BRCHIVE.TXT.1;OFFLINE
 DRCHIVE.TXT.1
 ERCHIVE.TXT.1;OFFLINE
 FRCHIVE.TXT.1;OFFLINE
 MAYBE.TXT.1
 MOOBE.TXT.1;OFFLINE
 TESTY.BBN.1,2

 Total of 14 files
@RETRIEVE BRCHIVE.TXT
 BRCHIVE.TXT.1 [OK]
      .
      .
      .
@TYPE BRCHIVE.TXT
!A TEXT FILE TESTER
@OELETE BRCHIVE.TXT,
@@CONTENTS-ONLY
@@
MISC:<GOLDEN>BRCHIVE.TXT.1 [OK]
MISC:<GOLDEN> [1 page freed]
@
```

4. Get an inclusive listing of your off-line files, including the date the tape copy was written. Retrieve three of them, and check the requests in the retrieval queue. Cancel one of the requests.

```
@OIRECTORY,
@@OFFLINE
@@TIMES TAPE-WRITE
@@

   MISC:<GOLOEN>
                  Tape-write

 ARCHIVE.ALSO.1;OFFLINE  8-Jun-79 07:59:08
   .NOT.1;OFFLINE  8-Jun-79 07:59:09
 OUMPER.MAC.1;OFFLINE  7-Mar-79 05:19:10
 PROOUK.EXE.4;OFFLINE  7-Mar-79 05:19:13
 SQUARE.EXE.1;OFFLINE  7-Mar-79 05:19:14

 Total of 5 files
@DIRECTORY,
@@OFFLINE
@@INVISIBLE
@@TIMES TAPE-WRITE
@@

   MISC:<GOLDEN>
                  Tape-write

 ARCHIVE.TOO.1;OFFLINE  8-Jun-79 07:59:10
 BRCHIVE.TXT.1;OFFLINE 27-Jun-79 04:04:58
 ERCHIVE.TXT.1;OFFLINE  8-Jun-79 07:59:11
 FRCHIVE.TXT.1;OFFLINE 12-Jul-79 03:23:03
 MOOBE.TXT.1;OFFLINE  8-Jun-79 07:59:12

 Total of 5 files
@RETRIEVE PROOUK.EXE, FRCHIVE.TXT, MOOBE.TXT
 PRODUK.EXE.4 [OK]
 FRCHIVE.TXT.1 [OK]
 MOOBE.TXT.1 [OK]
@INFORMATION RETRIEVAL-REQUESTS

Retrieval Queue:
 Name    Req#   Tape 1   Tape 2   User
------   ----   ------   ------   -------
MOOBE     507     5329     5520   GOLOEN
PROOUK    505     5538     5583   GOLDEN
FOOBAR    407     5845     5856   TOMCZAK
EE155     442     6279     5883   WRIGHT
BRCHIV    504     5543     7138   GOLOEN
FRCHIV    506     7138     7559   GOLOEN
There are 6 Jobs in the Queue (None in Progress)

@CANCEL RETRIEVE 507
[1 Job Canceled]
@
```

REWIND

Function

The REWIND command returns a magnetic tape to its load point (logical beginning, the beginning of the first file).

Format

```
@REWIND (DEVICE) dev:  /switch
```

where

dev: is the name of the tape set or magnetic tape drive that you want to rewind

/switch is one of the following:

/CURRENT-VOLUME-ONLY
rewinds tape set to beginning of currently mounted volume

/ENTIRE-VOLUME-SET
rewinds tape set to beginning of first volume
Default - ENTIRE-VOLUME-SET

Note: these switches can be used only for devices of the form MTn:, not MTAn:.

Restrictions

REWIND with Open Files

If you have given a CTRL/C to exit from a program that has opened a magnetic tape set and you then give the REWIND command for that tape set, the system will first ask if you want to close the associated file. You must do so for REWIND to succeed, but will probably be unable to continue the program from that point because the file will now be closed.

Effect on Memory and Terminal

The REWIND command does not affect memory and leaves your terminal at TOPS-20 command level.

REWIND (Cont.)

Related Commands

BACKSPACE — for moving a magnetic tape backward a specified number of files or records

DIRECTORY — (when used with a magnetic tape device) for rewinding a tape set, printing a directory of its files, and again rewinding the tape set

SKIP — for moving a magnetic tape forward a specified number of files or records

UNLOAD — for rewinding a magnetic tape completely onto the source reel

Examples

1. Rewind your magnetic tape.

```
@REWIND DAY:
@
```

2. Mount a tape, and prepare to copy files onto it. (Use the REWIND command to be sure you are at the beginning.) After copying the files, rewind the tape and (using the COPY command) read the first one. Then give TOPS-20 commands to free the resources you have been using.

```
@MOUNT TAPE DAY:
[Mount Request DAY Queued, Request-ID 183]
[Tape set OAY, volume DAY mounted]
[DAY: defined as MTO:]
@MDUNT STRUCTURE SNARK:
Structure SNARK: mounted
@ACCESS SNARK:
@REWIND DAY:
@CDPY SNARK:FIL-1.TAP DAY:
 SNARK:FIL-1.TAP.1 => MTO:FIL-1 [DK]
@CDPY SNARK:FIL-2.TAP DAY:
 SNARK:FIL-2.TAP.1 => MTO:FIL-2 [DK]
@CDPY SNARK:FIL-3.TAP DAY:
 SNARK:FIL-3.TAP.1 => MTO:FIL-3 [DK]
@REWIND DAY:
@COPY DAY: TTY:
 MTO: => TTY:

!THIS IS THE FIRST FILE.!
@DISMDUNT TAPE DAY:
[Tape dismounted, logical name DAY: deleted]
@END-ACCESS SNARK:
@OISMOUNT STRUCTURE SNARK:
Structure SNARK: dismounted
@
```

RUN

Function

The RUN command places in memory and starts an executable program.

Format

```
@RUN filespec/switch

where

filespec     is the file specification of any executable program
                  Default dev:<dir> - DSK:

                  Default .typ - .EXE

/switch      is     /USE-SECTION:n
                    specifies the memory section (from 0 to 37
                    octal)  in which your program is to run.  You
                    can use this switch only if your program  can
                    be contained in one section.
```

Characteristics

Efficiency of RUN

The RUN command does the work of the pair of commands GET and START. It is a faster and less expensive means of executing programs than EXECUTE, or than LOAD and START. Therefore you should store frequently-run programs in .EXE files and run them with this command.

Effect on Memory and Terminal

The RUN command terminates the current process and clears its memory, places in memory and starts the specified program, and leaves your terminal at command level in the program (if any), or at TOPS-20 command level.

Related Commands

EXECUTE	for running source or object programs
GET	for placing an executable program in memory
R	for running executable programs stored on SYS:
SAVE	for saving a program in executable (.EXE) format
START	for starting the program currently in memory

RUN (Cont.)

Examples

1. Run one of your executable programs.

```
@RUN TESTF1.EXE

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.04 ELAPSED TIME: 0.63
EXIT
@
```

2. Mount a structure and access a user's directory on the structure. Run one of his programs.

```
@MDUNT STRUCTURE SNARK:
Structure SNARK: mounted
@ACCESS SNARK:<ELDRIDGE>
Password:_____
@RUN SNARK:<ELDRIDGE>FT.EXE


NEXT NUMBER:
```

SAVE

Function

The SAVE command stores a copy of memory in an executable file.

Format

```
@SAVE (ON FILE) filespec  (PAGES FROM) loc1 (TO) loc2, loc3 loc4, ...
```

where

filespec — is the file specification under which you want to store the program
Default filespec - program name.EXE

loc1 loc2, loc3 loc4, ... — are pairs of octal numbers or symbolic expressions that specify the span(s) of memory pages you want to save
Default loc1 loc2 - all assigned pages of memory from 0 to the highest page number of the highest existing section

Output

Status of Files

If you use recognition of the file specification, the system prints !Old Generation!, !New Generation!, or !New File!, to indicate its status on disk, or !OK! if saved on a non-disk device.

Hints

Saving Programs Before Running Them

When you load a source or object program using the LOAD command, save it using SAVE before running it. Then you can run it in the future using RUN, without first loading it using a LOAD-class command. This is also true if you save the program after running it, but it will then be in a post-run state.

More Information

For more information about saved files, see the TOPS-20 Monitor Calls Reference Manual.

Effect on Memory and Terminal

The SAVE command does not affect memory and leaves your terminal at TOPS-20 command level.

SAVE (Cont.)

Related Commands

GET	for putting a saved file into memory
LOAD	for putting a source or object file into memory
RUN	for running a saved program
START	for starting the program in memory

Examples

1. Save the program currently in memory.

```
@SAVE
 TESTF1.EXE.6 Saved
@
```

2. Mount a magnetic tape in write-enabled mode. Use the GET command to put an executable program into memory, then save it (specifying a new filename) on tape and on disk. Finally, start the program, which is still in memory.

```
@MOUNT TAPE LAT:/WRITE-ENABLED
[Mount Request LAT: Queued, Request-ID 415]
[Tape set LAT, volume LAT mounted]
[LAT: defined as MT2:]
@GET TESTF1
@SAVE LAT:TAP.EXE
 MT2:TAP.EXE Saved
@SAVE
 TAP.EXE.1 Saved
@START

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.04 ELAPSED TIME: 0.17
EXIT
@
```

SET

Function

The SET command establishes your choice of many available options for your terminal session (job) or directory.

Format

@SET argument(s) setting(s)

where

argument — is a keyword, chosen from the list below, indicating your choice of SET command options

setting — is a word or number, required to complete the meaning of most SET commands

Summary of SET Command Arguments (defaults in boldface)

ACCOUNT account   remark
ADDRESS-BREAK octal or symbolic memory address,

- @@AFTER n   Default n - 1
- @@ALL
- @@EXECUTE
- @@NONE
- @@READ
- @@WRITE

ALERT date/time message
AUTOMATIC

CARD-READER-INPUT-SET name of input set   n
CONTROL-C-CAPABILITY

DEFAULT

- CARDS /switch(es)
- COMPILE-SWITCHES file type /switch(es)
- PAPER-TAPE /switch(es)
- PLOT /switch(es)
- PRINT /switch(es)
- SUBMIT /switch(es)
- TAKE
  - ALLOW
  - DISALLOW
  - ECHO
  - NO ECHO

DIRECTORY

- ACCOUNT-DEFAULT dev:<directory> account password
- ARCHIVE-ONLINE-EXPIRED-FILES
- **FILE-PROTECTION-DEFAULT** dev:<directory> octal code password
  Default code - 777700

```
DIRECTORY {  GENERATION-RETENTION-COUNT-DEFAULT dev:<directory> n
(Cont.)   |  password
          |       Default n - 1
          |
          |  NO ARCHIVE-ONLINE-EXPIRED-FILES
          |  OFFLINE-EXPIRATION-DEFAULT dev:<directory>date or +n
          |       Default n - 90
          |  ONLINE-EXPIRATION-DEFAULT dev:<directory>date or +n
          |       Default n - 60
          |  PASSWORD dev:<directory>
          |  old password
          |  new password
          |  new password
          |
          |  PROTECTION dev:<directory> octal protection code
          |  password
          |           Default code - 777700


ENTRY-VECTOR  {octal or symbolic } octal or symbolic length
              {memory location   } between 1 and 777
                      Default length - 1

            { ACCOUNT  filespecs account
            | EXPIRED filespecs
            | GENERATION-RETENTION-COUNT filespecs n   Default n - 1
            | INVISIBLE
FILE        | NO PROHIBIT filespecs
            |       RESIST filespecs
            { OFFLINE-EXPIRATION filespecs date or +n
            | ONLINE-EXPIRATION filespecs  date or +n
            | PROHIBIT filespecs
            | PROTECTION filespecs   octal protection code
            |             Default code - 777700
            | RESIST filespecs
            { VISIBLE

LATE-CLEAR-TYPEAHEAD
LOCATION node name::  Default node name - your host node
MAIL-WATCH user name

     { ADDRESS-BREAK
     | ALERT
     | AUTOMATIC
     | CONTROL-C-CAPABILITY
     |
     |          { CARDS
     |          | COMPILE-SWITCHES  file type or *
     |          | PAPER-TAPE
     | DEFAULT  { PLOT
     |          | PRINT
NO   {          | SUBMIT
     |          { TAKE
     |
             LATE-CLEAR-TYPEAHEAD
NO                     MAIL-WATCH user name
(Cont.)                RETRIEVAL-WAIT
             TIME-LIMIT
                   <RET>
             TRAP  FILE-OPENINGS
                          /ALL
                   JSYS   name
                          number
             UUO-SIMULATION
                                                  COPY-ON-WRITE
                                                  EXECUTE

                                                    COPY-ON-WRITE
        PAGE-ACCESS  octal page numbers           NO WRITE

                                                  NONEXISTENT
                                                  READ
                                                  WRITE

        RETRIEVAL-WAIT

        SESSION-REMARK remark of up to 39 characters

                       IMMEDIATE
        SPOOLED-OUTPUT DEFERRED

                            200
                            556
             DENSITY        800
                           1600
                           6250
                           SYSTEM-DEFAULT

                         ANSI-ASCII
                         CORE-DUMP
        TAPE FORMAT      INDUSTRY-COMPATIBLE
                         SYSTEM-DEFAULT

                         EVEN
             PARITY      ODD

             RECORD-LENGTH n bytes     Default n  - 512

        TIME-LIMIT n
              FILE-OPENINGS
                     /ALL
              JSYS   name
                     number
                 <RET>
        TRAP  NO FILE-OPENINGS
                        /ALL
                 JSYS   name
                        number
                 PROCEED
              PROCEED
        TYPEOUT MODE   NUMERIC
                       SYMBOLIC
        UUO SIMULATION
```

SET Command Arguments

ACCOUNT account   remark

begins charging the specified account for the remainder of your current terminal session or until you use the command again. You must supply an alphanumeric account name of 39 or fewer characters valid for your user name. Then you can type an optional session remark, also of 39 or fewer characters, to be inserted in system accounting data for your current terminal session. Check your current account and session remark with INFORMATION JOB-STATUS.

ADDRESS-BREAK octal or symbolic memory location,

```
@@AFTER n
@@ALL
@@EXECUTE
@@NONE
@@READ
@@WRITE
```

causes the program in memory to be suspended and a message to be printed on your terminal when the memory location you specify is referenced for the indicated operation - execute, read, write, or any of these (ALL). With the AFTER subcommand you determine how many times it must be referenced before the address break occurs; with NONE you cancel address breaks for the specified location, just as with the SET NO ADDRESS-BREAK command. Each SET ADDRESS-BREAK command cancels any previous address break. Check your current address break with INFORMATION ADDRESS-BREAK.

Default subcommands - ALL, and AFTER 1

```
       ( date and time )
       ( time          )
ALERT  { +hh:mm        } message
       ( day of week   )
       ( TODAY         )
```

causes the system to buzz your terminal and type a line at the specified date and time. This line contains the time of day and your message. If the SET AUTOMATIC command is in effect, this message is sent no matter what you are doing at your terminal. Otherwise, you are alerted only when your terminal is about to type a TOPS-20 prompt ($ or @). Alert settings are erased when you log out. Therefore, you should enter this command in your COMAND.CMD file if you want to be alerted in the distant future or on a regular basis. Check the setting of this command with INFORMATION ALERTS. Refer to Example 8.

AUTOMATIC

allows you to be notified by the system (as a result of a SET ALERT or SET MAIL-WATCH command) whether or not your job is at TOPS-20 command level. Every five minutes, the system checks to see if you should be notified. It is recommended that you enter this command in the COMAND.CMD file to ensure coverage from the time you log in.

SET Command Arguments (Cont.)

CARD-READER-INPUT-SET name of input set n

is used by the batch system to associate the indicated set of punch cards, beginning with deck n, with system device CDR:

CONTROL-C-CAPABILITY

allows any program executed at the current command level to handle CTRL/C interrupts itself. You cannot use this command in a batch job. Check the current setting with INFORMATION PROGRAM-STATUS.

Default

```
        (CARDS  /switch(es)
        |COMPILE-SWITCHES  file type  /switch(es)
        |PAPER-TAPE  /switch(es)
DEFAULT |PLOT /switch(es)
        |PRINT  /switch(es)
        <SUBMIT  /switch(es)
        |    (ALLOW
        |    |DISALLOW
        |TAKE<ECHO
        |    |NO ECHO
        (    (
```

sets up, as default global arguments to the command selected (CARDS refers to the PUNCH CARDS command, COMPILE-SWITCHES to all the LOAD-class commands, and PAPER-TAPE to the PUNCH PAPER TAPE command), the arguments you specify. These arguments are switches, except for SET DEFAULT TAKE, which allows arguments ALLOW/DISALLOW (errors during the execution of a command file), ECHO, and NO ECHO. You can specify any switch valid for the given command, preceding each switch with a slash (/). For COMPILE-SWITCHES you must precede the switches with the file type (excluding the period (.)) to which you want the switches to apply; then the switches behave as if typed immediately after each file of this type. Check current settings with INFORMATION DEFAULTS.

DIRECTORY ACCOUNT-DEFAULT dev:<directory> default account PASSWORD:password

sets the account of 39 or fewer characters to charge for your terminal session whenever you log in to this directory without specifying an account. Check with INFORMATION DIRECTORY.

DIRECTORY ARCHIVE-ONLINE-EXPIRED-FILES dev:<directory>

causes on-line files that have expired to be automatically archived. Check with INFORMATION DIRECTORY.

SET Command Arguments (Cont.)

DIRECTORY FILE-PROTECTION-DEFAULT dev:<directory> octal code
PASSWORD:password

sets a default protection code governing access to files subsequently created in the directory. See description of FILE PROTECTION argument for a list of valid protection codes. Check with INFORMATION DIRECTORY.

Default code - 777700

DIRECTORY GENERATION-RETENTION-COUNT-DEFAULT dev:<directory> n
PASSWORD:password

prescribes for the directory a default value for the number of generations of subsequently-created files to save. Check with INFORMATION DIRECTORY.

Default n - 1

DIRECTORY NO ARCHIVE-ONLINE-EXPIRED-FILES

prevents on-line files that have expired from being automatically archived

Default

DIRECTORY OFFLINE-EXPIRATION-DEFAULT dev:<directory> date or +n

sets the tape expiration date for files that are to go off line because of archiving or migration. If you specify "+n", the expiration date is n days from the date the files were moved off line.

Default n - 90

DIRECTORY ONLINE-EXPIRATION-DEFAULT dev:<directory> date or +n

sets the disk expiration date for files that are to be created in the directory. If you specify "+n", the expiration date is n days from the creation date.

Default n - 60

DIRECTORY PASSWORD dev:<directory>
OLD PASSWORD:old password
NEW PASSWORD:new password
RETYPE NEW PASSWORD:new password

allows you to change the password of the directory named. Check with INFORMATION DIRECTORY.

DIRECTORY PROTECTION dev:<directory> octal protection code
PASSWORD:password

establishes for the directory a protection code constructed (by addition) from the values shown below. Check with INFORMATION DIRECTORY.

SET Command Arguments (Cont.)

77 full access to the directory

40 access to files in the directory (including expunging individual files), consistent with the file protection of the files

10 connect to the directory without giving a password, undelete files, expunge the entire directory, and change times, dates and accounting information for files. All other access is governed by the file protection of each file.

04 create files in the directory

00 no access to the directory

Default code - 777700

See the TOPS-20 User's Guide for more information about protection codes.

ENTRY-VECTOR {octal or symbolic memory location} octal or symbolic length from 1 to 777

lets you change the entry vector of the program in memory. Check the current setting with INFORMATION MEMORY-USAGE.

Default length - 1

FILE ACCOUNT filespecs account

specifies the account to charge for storage of the files named. Check with FDIRECTORY.

FILE EXPIRED filespecs

establishes today as the expiration date for the specified on-line files. Check with DIRECTORY.

FILE GENERATION-RETENTION-COUNT filespecs n

tells the system how many generations of the specified files to save. Check with FDIRECTORY.

Default n - 1

FILE INVISIBLE filespecs

makes the specified file inaccessible to most programs and TOPS-20 commands

FILE NO PROHIBIT filespecs

allows the system to migrate the specified file to off-line storage if disk space becomes low. For privileged users only.

Default

FILE NO RESIST filespecs

cancels the effect of the SET FILE RESIST command. This switch allows the system to move the specified files to off-line storage without hesitating.

Default

SET Command Arguments (Cont.)

FILE OFFLINE-EXPIRATION filespecs date or +n

specifies when the contents of an off-line file can be expunged from off-line storage. If you specify "+n", the expiration date is n days from the date it was moved off line.

FILE ONLINE-EXPIRATION filespecs date or +n

establishes the date on which the disk contents of the specified files will expire. If you specify "+n", the expiration date is n days from the current date. Check with DIRECTORY.

FILE PROHIBIT filespecs

tells the system never to migrate the specified file to off-line storage. For privileged users only. (Nonprivileged users should refer to the description of the SET FILE RESIST command. See also Hints - Alternative to SET FILE PROHIBIT for Non-privileged Users, below.)

FILE PROTECTION filespecs octal protection code

sets, for the specified files, a protection code constructed (by addition) from the octal values shown below. Check with FDIRECTORY.

77	full access to the file
40	read the file
20	write and delete the file
10	execute the program contained in the file
04	append to the file
02	list the file specification using DIRECTORY-CLASS commands
00	no access to the file

Default code - 777700

See the <u>TOPS-20 User's Guide</u> for more information about protection codes.

FILE RESIST filespecs

offers nonprivileged users limited protection against migration. The specified files will be forced offline only when absolutely necessary. Check with DIRECTORY.

FILE VISIBLE filespecs

makes the specified file accessible to all programs and TOPS-20 commands

Default

SET Command Arguments (Cont.)

LATE-CLEAR-TYPEAHEAD

instructs the system to disregard all terminal input made after a line that causes an error and before the next prompt. Check the setting for your current level of TOPS-20 with INFORMATION COMMAND-LEVEL.

LOCATION node name::

sets the DECnet network node at which your job is considered to be running. Your PLEASE requests and MOUNT command requests are sent to this node, as well as any line printer output not directed elsewhere (e.g., by the /DESTINATION-NODE switch). You must terminate the node name with two colons (::). Check available nodes with INFORMATION DECNET, and check your current setting (if different from your host node (log-in node)) with INFORMATION JOB-STATUS.

Default node name - your host node

MAIL-WATCH user name

checks the MAIL file for the specified user immediately and every five minutes thereafter whenever your terminal is about to type a TOPS-20 prompt (@ or $), and sends a message notifying you that the user has new mail if this file contains unread mail. If the SET AUTOMATIC command is in effect, this message is sent no matter what you are doing at your terminal.

Default user name - your user name

NO ALERT date/time

removes settings that were established with the SET ALERT command. You can specify date and time in the same formats as with SET ALERT. Additionally, you can enter BEFORE or AFTER the date and time to indicate a time period in which alerts are to be suppressed. If you specify no date or time argument, all alert settings are erased. This command takes effect when you log out.

Default

NO AUTOMATIC

causes you to be alerted by the system (as a result of a SET ALERT or SET MAIL-WATCH command) only when your terminal is about to type a TOPS-20 prompt (@ or $).

Default

SET (Cont.)

SET Command Arguments (Cont.)

NO CONTROL-C-CAPABILITY

removes the ability of programs at the current level of TOPS-20 to prevent your terminal from returning to the TOPS-20 command processor whenever you type a CTRL/C; i.e., ensures that CTRL/C will return you to TOPS-20. Check the setting for your current level of TOPS-20 with INFORMATION PROGRAM-STATUS.

NO DEFAULT { CARDS
COMPILE-SWITCHES file type
PAPER-TAPE
PLOT
PRINT
SUBMIT }

nullifies all default arguments (established with a previous SET DEFAULT command) for the indicated command

NO LATE-CLEAR-TYPEAHEAD

instructs the system to accept terminal input made after an error message is sent to your terminal and before the next prompt. Check the setting for your current level of TOPS-20 with INFORMATION COMMAND-LEVEL.
Default

NO MAIL-WATCH user

disables periodic checking of the MAIL file associated with the specified user, although you see the notice, YOU HAVE A MESSAGE, at log-in time; and you see [YOU HAVE A MESSAGE FROM user] whenever someone sends you mail, unless you have given the REFUSE SYSTEM-MESSAGES or REFUSE LINKS command. You can always check the status of your MAIL file at any time by giving the INFORMATION MAIL command.
Default

NO RETRIEVAL-WAIT

tells the system to send an error message if your job attempts to use off-line files.
Default

NO TIME-LIMIT

removes any time limit set by a previous SET TIME-LIMIT command. You cannot use this command in a batch job.

SET Command Arguments (Cont.)

NO TRAP

prevents any trapping that would have occurred as the result of a SET TRAP command.
Default

NO TRAP FILE-OPENINGS

nullifies the effects of the SET TRAP FILE-OPENINGS command, disabling the TOPS-20 feature that causes you to be notified when a program tries to open a file.
Default

NO TRAP JSYS /ALL
name
number

nullifies the effects of the SET TRAP JSYS command, disabling the TOPS-20 feature that causes traps to occur when a JSYS is executed.
Default

NO UUO-SIMULATION

disables the feature of the TOPS-20 monitor that makes it possible to use programs originally written for the TOPS-10 operating system. Check the current setting with INFORMATION PROGRAM-STATUS.

PAGE-ACCESS range of octal page numbers type of access

COPY-ON-WRITE
provides programs with private copies of the specified pages (13:17, 21 specifies pages 13 through 17 and page 21, 6 pages in all) of current memory whenever they try to change (write to) them

EXECUTE
allows programs accessing these pages to execute the instructions they may contain

NO COPY-ON-WRITE
WRITE
prevents programs from performing the indicated operation on the specified pages

NONEXISTENT
removes the indicated pages from memory

READ
permits programs to examine the indicated pages of memory

WRITE
permits programs to change as well as examine the indicated pages

SET Command Arguments (Cont.)

Check the status of current memory pages with INFORMATION MEMORY-USAGE.

RETRIEVAL-WAIT

tells the system that your job is willing to wait for retrieval of off-line files. Retrieval is then requested implicitly whenever you or a program you run attempts to access off-line files. Use INFORMATION SYSTEM-STATUS to be sure that automatic retrieval waits are enabled for the system before giving this command.

SESSION-REMARK remark

lets you insert a note or reminder of up to 39 characters into system accounting data. Check with INFORMATION JOB-STATUS.

```
               {IMMEDIATE
SPOOLED-OUTPUT {DEFERRED
```

directs the system either to begin processing your spooled output requests (e.g., those made using the COPY or CREF command) as soon as you make them, or to defer them until log-out. Check with INFORMATION SPOOLED-OUTPUT-ACTION.

Default - IMMEDIATE

```
              (200
              (556
TAPE DENSITY  (800
              (1600
              (6250
              (SYSTEM-DEFAULT
```

instructs the system to read and write magnetic tapes for your job at the indicated density (in bits per inch). SYSTEM-DEFAULT, one of these values (usually 1600), is established by your system manager. The value set by this command can be superseded by commands within a program. Check with INFORMATION TAPE-PARAMETERS.

Default - SYSTEM-DEFAULT

TAPE FORMAT
ANSI-ASCII
CORE-DUMP
HIGH-DENSITY
INDUSTRY-COMPATIBLE
SIXBIT
SYSTEM-DEFAULT

advises the system that the format to use in processing tapes is either ANSI-ASCII, which stores each word of data as five 7-bit bytes in five frames of a 9-track type; or CORE-DUMP, which stores each word of data as a single 36-bit byte in five frames of a 9-track tape, partially using the fifth frame; or HIGH-DENSITY, which stores each two words of data as nine 8-bit bytes in nine frames of a 9-track tape; or INDUSTRY-COMPATIBLE, which stores each word of data as four 8-bit bytes in four frames of a 9-track tape; or SIXBIT, which stores each word of data as six 6-bit bytes in six frames of a 7-track tape. SYSTEM-DEFAULT, one of these (usually CORE-DUMP), is chosen by your system manager. See also Restrictions - Using SET TAPE Commands, in the MOUNT command description in this manual. See the TOPS-20 Monitor Calls Reference Manual for more information about hardware data modes for magnetic tapes. Check with INFORMATION TAPE-PARAMETERS.

Default - SYSTEM-DEFAULT

TAPE PARITY
EVEN
ODD

tells the system which parity to assume when verifying the accuracy of tape records. Check with INFORMATION TAPE-PARAMETERS.

Default - ODD

TAPE RECORD-LENGTH n

sets the size, in bytes, for each physical record on a tape. Check with INFORMATION TAPE-PARAMETERS.

Default n - 512

TIME-LIMIT n

tells the system to stop any program or terminal printout when the given amount of additional CPU time (in seconds) has been used, and to inform you with a fatal error message. This command is used by the batch system to limit the runtime of batch jobs.

SET (Cont.)

SET Command Arguments (Cont.)

TRAP FILE-OPENINGS

sends a message to your terminal when any program attempts to open a file. Check with INFORMATION PROGRAM-STATUS. Refer to Example 5.

TRAP JSYS /ALL
name
number

causes trapping to occur for all or for the specified JSYS. You can specify a JSYS by its name or octal value. Check with INFORMATION PROGRAM-STATUS. Refer to Example 6.

NOTE

> The SET TRAP command is ineffective for execute-only programs (those with a protection code of 10). Attempts to run such programs after a SET TRAP command has been specified will result in error messages.

TRAP NO

same as SET NO TRAP.

TRAP NO FILE-OPENINGS

same as SET NO TRAP FILE-OPENINGS.

TRAP NO JSYS /ALL
name
number

same as SET NO TRAP JSYS.

TRAP NO PROCEED

directs the system to terminate the program after a trap has occurred as a result of a SET TRAP command. Check with INFORMATION PROGRAM-STATUS. Refer to Example 7.

TRAP PROCEED

directs the system to continue a program after a trap has occurred as a result of a SET TRAP command. Check with INFORMATION PROGRAM-STATUS.
Default

TYPEOUT MODE NUMERIC
SYMBOLIC

establishes the mode in which memory addresses and contents are to be typed on your terminal in response, for example, to a CTRL/T or a command such as EXAMINE or INFORMATION. Check with INFORMATION PROGRAM-STATUS.
Default - NUMERIC

SET Command Arguments (Cont.)

UUO-SIMULATION	allows the system to execute programs originally written for the TOPS-10 operating system, by calling the TOPS-10 compatibility package, PA1050.EXE. Check the current setting with INFORMATION PROGRAM-STATUS. Default

Characteristics

Affect Only Current Terminal Session

The SET command, except for SET DIRECTORY and SET FILE, applies to the current terminal session only, and in most cases only to the current level of TOPS-20 in that session. Therefore put SET DEFAULT, SET CONTROL-C-CAPABILITY, and other SET commands into a COMAND.CMD file in your log-in directory if you want them to be in effect every time you log in or give the PUSH command.

Hints

Using SET PAGE-ACCESS

A SET PAGE-ACCESS command can take several arguments on the same line, with cumulative effect; contradictions are resolved in favor of the last item given. So SET PAGE-ACCESS 6 EXECUTE NO COPY-ON-WRITE NO WRITE allows a user to execute page 6 but not to change it; SET PAGE-ACCESS 7 NO WRITE WRITE allows changes to page 7.

To Make Modifiable Copies of Write-protected Programs

Because the SAVE command preserves the write protection of files, you should use the SET PAGE ACCESS WRITE or SET PAGE-ACCESS COPY-ON-WRITE command before giving SAVE if you want to save a modifiable copy of a program.

Using SET TIME-LIMIT

Although the SET TIME-LIMIT command is ordinarily used by the batch system to limit the runtime of jobs, you can employ it as a timesharing user to give you a fatal error message when the specified amount of CPU time has been spent. To find out how much of this time you have left, give the SYSTAT . LIMIT and INFORMATION PROGRAM-STATUS commands. The difference between the SYSTAT . LIMIT time and the "Used" time reported by INFORMATION PROGRAM-STATUS tells you the approximate time remaining.

SET (Cont.)

SET Commands Useful for Debugging Programs

SET ADDRESS-BREAK

SET ADDRESS-BREAK shows you how often and for what purpose a memory address is referenced. When an address break occurs, a message will show the memory location at which execution of your program will resume.

SET NO CONTROL-C-CAPABILITY, SET UUO-SIMULATION, SET PAGE-ACCESS

If you are debugging a program, use the SET NO CONTROL-C-CAPABILITY command to ensure that you can use CTRL/C to leave the program. Test a program that traps CTRL/Cs by having it trap, say, CTRL/As instead during debugging. Also, setting NO CONTROL-C-CAPABILITY, NO UUO-SIMULATION, or PAGE-ACCESS NO WRITE NO COPY-ON-WRITE will show you what part of the program (if any) is attempting to use these features.

Alternative to SET FILE PROHIBIT for Non-privileged Users

Even if you do not have sufficient privileges to use the SET FILE PROHIBIT command, you can still do something to delay the removal of important files to off-line storage. Create a file named MIGRATION.ORDER in each directory for which you wish to control migration. The contents of this file should be the specifications of files that you want to be migrated first, when migration is performed. You may use wildcard characters (* and %) to specify more than one file. To protect source programs, for example, you could specify that executable programs and binary files be migrated first, by listing "*.EXE, *.REL" in MIGRATION.ORDER. To protect edited files, you could list "*.Q*" (this ensures that unedited back-up files produced by the EDIT program be migrated before the edited versions). Any files not listed in MIGRATION.ORDER will be protected from migration until all listed files have been migrated. Remember that, even without being listed in MIGRATION.ORDER, files are not usually migrated to off-line storage if they have been used or changed within a period of time specified by your system manager.

The SET FILE RESIST command also offers limited protection against involuntary migration.

Restrictions

Using SET Commands in Batch Jobs

Put SET commands into a BATCH.CMD file in your log-in directory if you want them to apply to the first (highest) level of TOPS-20 in batch jobs you submit; put them into COMAND.CMD in your log-in directory if you want them to apply to all levels of TOPS-20 in those jobs. Remember, though, that you must not give SET CONTROL-C-CAPABILITY, SET NO TIME-LIMIT, or SET TIME-LIMIT (or the ATTACH command) within any batch job.

Using SET DIRECTORY Commands

You will be able to use the SET DIRECTORY commands only if your system is instructed at system start-up time to allow them. Otherwise, the system will send you error messages in response to SET DIRECTORY commands.

Effect on Memory and Terminal

The SET command does not affect memory and leaves your terminal at TOPS-20 command level.

Examples

1. Set the LATE-CLEAR-TYPEAHEAD parameter for your job.

```
@SET LATE-CLEAR-TYPEAHEAD
@
```

2. Find out the placement of your program in memory; set an address break to occur at location 2412 when the instruction it contains has been executed six times. Then give the INFORMATION ADDRESS-BREAK command to see the location and operation for which the current address break has been set.

```
@INFORMATION MEMORY-USAGE

 5. pages, Entry vector loc 400010 len 254000

0-3      Private   R, W, E
400      Private   R, W, E

@SET ADDRESS-BREAK 2412,
@@AFTER 6
@@EXECUTE
@@
@INFORMATION ADDRESS-BREAK
Address break at 2412 on execute.
@
```

3. Set defaults for PRINT command switches, then print a file immediately by explicitly supplying an /AFTER switch with an early hour as argument.

```
@SET DEFAULT PRINT /LOWERCASE/AFTER:17:00
@PRINT /AFTER:0:0 4-UPED.TXT
[Job 4-UPED Queued, Request-ID 346, Limit 200]
@INFORMATION OUTPUT-REQUESTS /USER


Printer Queue:
Job Name  Req#  Limit          User
--------  ----  -----  ------------------------
* 4-UPED   346   200   LATTA                        On Unit:0
   Started at 16:11:11, printed 0 of 200 pages
There is 1 Job in the Queue (1 in Progress)

@
```

4. Put an executable program into memory and set the page access of its first page to NO COPY-ON-WRITE; try to deposit a value (32) in memory location 500 of the page (this fails). Then set its page access to COPY-ON-WRITE and try once more, succeeding this time. Give the INFORMATION MEMORY-USAGE command again. Notice that you now have your own copy of the page in memory; it is no longer mapped from the file TESTF1.EXE in your connected directory.

```
@GET TESTF1
@INFORMATION MEMORY-USAGE

 1. pages, Entry vector loc 145 len 254000

0         TESTF1.EXE.3 1    R,CW,E

@SET PAGE-ACCESS 0 NO COPY-ON-WRITE
@DEPOSIT 500 32
?Can't write that page
@SET PAGE-ACCESS 0 COPY-ON-WRITE
@DEPOSIT 500 32
 [Shared]
@INFORMATION MEMORY-USAGE

 1. pages, Entry vector loc 145 len 254000

0         Private   R,W,E

@
```

5. Learn what files are opened when you edit a file.

```
@SET TRAP FILE-OPENINGS
@EDIT LOGIN.CMD
[Fork EDIT opening SWITCH.INI.3 for reading]
[Fork EDIT opening LOGIN.CMD.33 for reading]
Edit: LOGIN.CMD.33
[Fork EDIT opening EDIT-BUFFER.OUT.100042 for writing]
*EU
[Fork EDIT opening EDIT-BUFFER.OUT.100042 for reading]
[Fork EDIT opening LOGIN.CMD.34 for writing]

[LOGIN.CMD.34]
@
```

6. Cause a trap to occur whenever the GTFDB JSYS is executed. Then edit a file. The EDIT command invokes the GTFDB JSYS and causes a line to type out in the following format:

   [fork "trap" <location>/<jsys name> "Ac's 1-4:" <ac contents>]

   Note that the location is in symbolic form if you so specified in the SET TYPEOUT MODE command.

```
@SET TRAP JSYS GTFDB
@EDIT LOGIN.CMD
[EDIT trap 3515/ GTFDB Ac's 1-4: 11\1000004\20321\424153000000]
[EDIT trap 3562/ GTFDB Ac's 1-4: 11\2000011\4\424153000000]
Edit: LOGIN.CMD.42
*EU

[LOGIN.CMD.43]
@
```

7. Specify that program execution is to halt whenever a GTFDB JSYS causes a trap. Then edit a file. The EDIT command invokes the GTFDB JSYS, causing a trap to occur, which causes the EDIT process to immediately halt.

```
@SET TRAP NO PROCEED
@SET TRAP JSYS GTFDB
@EDIT LOGIN.CMD
[EDIT trap 3515/ GTFDB Ac's 1-4: 10\1000004\20321\424153000000]
@
```

8. Arrange for the system to remind you of a future obligation. Then verify that you will be reminded.

```
@SET ALERT (AT TIME) MONDAY 11:00:00 Turn in last week's time card by noon
@SET AUTOMATIC
@INFORMATION (ABOUT) ALERTS (PENDING)
 Next alert at 8-Jun-82 16:55:00 - Almost time to go home!!
 Other alerts set for:
    11-Jun-82 08:55:00 - Project meeting at 9:00:00
    14-Jun-82 11:00:00 - Turn in last week's time card by noon


  Alerts are automatic
@
```

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SKIP

Function

The SKIP command moves a magnetic tape set forward over a specified number of files or records, or to the logical end of the tape set.

Format

```
@SKIP (DEVICE) dev: n units
```

where

dev: is the name of the tape set or magnetic tape drive that you want to move forward

n is the number of files or records over which you want to skip

units is either FILES or RECORDS, where records are sections of a file; or LEOT, to skip to the logical end of the tape set, which is the next point on the tape set having two adjacent EOF (end-of-file) marks.

Default units - FILES

Restrictions

SKIP With Open Files

If you have given a CTRL/C to exit from a program that has opened a file in a magnetic tape set and you then give the SKIP command for that tape set, the system will first ask if you want to close the associated file. You must do so for SKIP to succeed, but you will probably be unable to continue the program from that point because the file will now be closed.

RECORDS Argument Used for Unlabeled Tapes Only

You cannot use the RECORDS argument to the SKIP command when using a labeled tape, because read and write operations for labeled tapes always move the tape to the beginning of a file.

SKIP (Cont.)

Warning

Skipping Past LEOT (Unlabeled Tapes Only)

If you specify too large a value for n in the SKIP command line, you can move past the logical end of tape (LEOT). In this case, the operator may have to intervene before your tape control commands will have effect again. You must be sure how many files you have in the tape set if you use SKIP n rather than SKIP LEOT. This problem can occur for any tapes mounted on drives of the form MTAn:, or for unlabeled tapes mounted on drives of the form MTn:.

Effect on Memory and Terminal

The SKIP command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

UNLOAD for rewinding a magnetic tape completely onto the source reel (only for tapes mounted on drives having device names of the form MTAn:)

Examples

1. Skip over the next 2 files on the magnetic tape you are using (mounted on magnetic tape drive MT0: in this case).

```
@SKIP MT0:  2 FILES
@
```

2. Skip over the next two records on an unlabeled tape.

```
@SKIP MTA0:  2 RECORDS
@
```

3. Use the MOUNT command to ask the operator to mount your tape in write-enabled mode, then copy 3 files to the tape from your directory on structure SNARK:. Use the REWIND command to go back to the beginning, and the SKIP command to skip over the first file. Use the COPY command to have the next file (FIL-2) printed on your terminal, then give the SKIP command again to skip to the logical end-of-tape. You are skipping only one file, FIL-3, in this case.

```
@MOUNT TAPE DAY:/WRITE-ENABLED
[Mount Request DAY Queued, Request-ID 187]
[Tape set DAY, volume DAY mounted]
[DAY: defined as MT0:]
@REWIND DAY:
@MOUNT STRUCTURE SNARK:
Structure SNARK: mounted
@ACCESS SNARK:
@COPY SNARK:FIL-1.TAP DAY:
 SNARK:FIL-1.TAP.1 => MT0:FIL-1 [OK]
@COPY SNARK:FIL-2.TAP DAY:
 SNARK:FIL-2.TAP.1 => MT0:FIL-2 [OK]
@COPY SNARK:FIL-3.TAP DAY:
 SNARK:FIL-3.TAP.1 => MT0:FIL-3 [OK]
@REWIND DAY:
@SKIP DAY: 1
@COPY DAY: TTY:
 MT0: => TTY:

!THIS IS THE SECOND FILE.!
@SKIP DAY:  LEOT
@
```

START

Function

The START command begins execution of the program currently in memory.

Format

```
@START (PROGRAM) location
```

where

location is the octal or symbolic address where you want the program to start
Default location - the normal starting address, that is, the first word in the program's entry vector

Hints

Further Information

For more information about entry vectors, see the TOPS-20 Monitor Calls Reference Manual.

Special Cases

Running COBOL Programs a Second Time

After running a program (with a RUN or EXECUTE command, or with a GET and START or LOAD and START combination) you can usually run it again using START. COBOL programs are an exception: to run them again you must reload them.

Effect on Memory and Terminal

The START command starts the program in memory at the specified address, and leaves your terminal at whatever mode the program puts it in.

Related Commands

CONTINUE	for resuming execution of a halted program in memory
GET	for placing executable programs in memory
LOAD	for loading source or object programs into memory

REENTER   for starting the program in memory at its alternate entry point (if any)

SAVE   for saving a loaded program in an .EXE file

Examples

1. Start the program currently in memory.

```
@START
```

2. Put an executable program in memory and start it. Then run it again.

```
@GET TESTF1.EXE
@START

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.04 ELAPSED TIME: 0.23
EXIT
@START

THIS IS A TEST.

END OF EXECUTION
CPU TIME: 0.02 ELAPSED TIME: 0.02
EXIT
@
```

3. Begin using the FILCOM program to compare two files. Give a CTRL/C to halt FILCOM, then a CTRL/T to determine the location where it was stopped. Give the DDT command, and do some work within the DDT program; leave DDT with a CTRL/Z, returning to TOPS-20 command level. Give the START command to start FILCOM again, using as argument the address reported by CTRL/T above.

```
@FILCOM

*TTY:=DUMPER.MAC, BACKUP.MAC
^C
@ FILCOM ^C from Running at 400543 Used 0:00:03.1
in 0:01:33, Load 2.24

@DDT
DDT
3/   PAT..+361,,3066
4/   56
^Z
@START 400543

No differences encountered

*^C
@
```

SUBMIT

Function

The SUBMIT command places requests in the batch input queue (list of jobs waiting to be processed by the batch system).

Format

@SUBMIT (BATCH JOB) /switch(es) filespec/switch(es),...

where

switches — are keywords, chosen from the list below, indicating your choice of SUBMIT command options. These switches have different effects according to their position in the command line: placed before all files in the command, they act as defaults for all; otherwise they affect only the nearest preceding file.
Defaults are shown in the list of switches

filespec — is the specification of a batch control file (see the TOPS-20 User's Guide), containing batch commands and the commands with which you would have done the job as a timesharing user instead of as a batch user
Default file type - .CTL

,... — means that after a comma you can give more arguments (filespec and switches) of the form already shown

Summary of SUBMIT Command Switches (defaults in boldface)

/ACCOUNT:account	**Default** account - your current account
/AFTER:date and/or time	
YES **/ASSISTANCE**:NO	
APPEND **/BATCH-LOG**:SUPERSEDE SPOOL	
/BEGIN:n	**Default** n - 0
/CARDS:n	**Default** n - 1000
/CONNECTED-DIRECTORY:dev:<directory>	
/DELETE	
/DEPENDENCY-COUNT:n	**Default** n - 0
/DESTINATION-NODE:node name	
/FEET:n	**Default** n - 200
/JOBNAME:6-character name	**Default** name - first six characters of control filename
KEEP **/LOGDISPOSITION**:DELETE	
/LOGNAME:filespec	**Default** filespec - control filename, file type .LOG

```
        YES
/NOTIFY:NO
        ALWAYS
/OUTPUT:ERRORS
        NOLOG
/PAGES:n                        Default n - 200
/PRIORITY:n                     Default n - 10
/PRESERVE
/PROCESSING-NODE:node name
/READER
             NO
/RESTARTABLE:YES                Default argument (if switch is
                                                   given) - YES

/SEQUENCE:n
/TAG:6-character label
/TIME:hh:mm:ss                  Default time limit  (if  switch  is
                                        omitted) - 00:05:00
                                Default hh:mm:ss  (if   switch   is
                                        given   without   colon  or
                                        argument) - 60 (minutes)
/TPLOT:n                        Default n - 200
        NO or  0
/UNIQUE:YES or 1
/USER:user name
```

SUBMIT Command Switches

/ACCOUNT:account

specifies the account of 39 or fewer characters to charge for your batch request. This account must be valid for your user name.

```
     Default  account - your  current
                        account (check
                        with
                        INFORMATION
                        JOB-STATUS)
```

/AFTER:date and/or time, or

day of week (or TODAY) and/or time

ensures that the job will not be started until after the date and/or time specified. NOV-12-79, and 18:00:00 illustrate two arguments to this switch. If you give both date and time, separate them with a space. When given alone, the time may be preceded with a plus sign (+), which will delay processing by the indicated length of time from the present.

SUBMIT Command Switches (Cont.)

Alternatively, you may give a day of the week (e.g., MONDAY) or TODAY as argument; then the batch job will not be started until the beginning of the following day. If you follow this argument with a plus sign and a time, the job will be further delayed by this amount.

```
             YES
/ASSISTANCE:NO
```

tells the system whether your job will require the assistance of the operator (e.g., to mount a structure or magnetic tape) when it is run

Default - YES

```
           APPEND
/BATCH-LOG:SUPERSEDE
           SPOOL
```

tells the system either to append the log file of the batch job to any existing log file of the same name, or to write a new generation of the log file, or to send the log file to the spool area only

Default - APPEND

/BEGIN:n

starts processing the control file at line n of the file. Use this switch for a control file that can fit different applications depending on where processing begins. (See also the /TAG switch.)

Default n - 0

/CARDS:n

limits to n the maximum number of cards to be punched by the job

Default n - 1000

/CONNECTED-DIRECTORY:dev:<directory>

specifies the connected directory for the batch job. For privileged users only.

/DELETE

tells the system to delete the control file after the batch job has run

/DEPENDENCY-COUNT:n

sets the job's dependency count to n. Because a batch job does not get processed until its dependency count is 0, you can delay a job by assigning it a positive dependency count and then using the MODIFY command to bring the count to 0 at the proper time.

Default n - 0

SUBMIT Command Switches (Cont.)

/DESTINATION-NODE:node name::

specifies the DECnet remote job entry station on whose line printer the log file of your batch job is to be printed. The node name must be of six or fewer characters and must be followed by two colons (::).

/FEET:n

limits to n the maximum number of feet of paper tape to be punched by the job

Default n - 200

/JOBNAME:name

assigns a name (of six or fewer characters) to the batch job

Default name - first six characters of control filename

```
                  KEEP
/LOGDISPOSITION:DELETE
```

tells the system whether to delete the log file after it has been printed

Default - KEEP

/LOGNAME:filespec

specifies where to place the log file of the batch job

Default dev:<directory> - your connected directory at the time of the SUBMIT command

Default filename - control filename

Default type - .LOG

```
        YES
/NOTIFY:NO
```

tells the system whether to send a message to your terminal when the batch job has been completed

Default argument - NO

Default argument (if switch is given) - YES

```
        ALWAYS
/OUTPUT:ERRORS
        NOLOG
```

says whether you want the log file to be printed always, or only in the case of unhandled errors occurring within the job, or never. No matter which option you choose, the log file is always written.

Default - ALWAYS

/PAGES:n

limits to n the maximum number of pages of line printer output to be printed by the job

Default n - 200

SUBMIT Command Switches (Cont.)

/PRESERVE

tells the system not to delete the control file after the batch job has run
Default

/PRIORITY:n

assigns a decimal number n to the job, reflecting the urgency of the batch request. This n must be from 0 to 63, with larger numbers receiving earlier treatment.
Default n - 10

/PROCESSING-NODE:node name::

specifies the IBM host system on whose CPU the JCL batch job is to be run. The node name must be of six or fewer characters and must be followed by two colons (::).

/READER

tells the system that your control file is composed of card images, including control cards, on disk. For details see the TOPS-10/20 Batch Reference Manual.

NO
/RESTARTABLE:YES

decides whether the job should be started again if the system crashes and is restarted
Default argument - NO

Default argument (if switch is given) - YES

/SEQUENCE:n

specifies that n, instead of a number supplied by the system, is to be the sequence number of the job

/TAG:label

starts processing the control file at the line beginning with label::, where label is an alphanumeric name of six or fewer characters. Use this switch for a control file that can fit different applications depending on where processing begins.

/TIME:hh:mm:ss

limits the maximum amount of CPU time available to the job; given in hours, minutes, and seconds.
Default time limit (if switch is omitted) - five minutes

Default hh:mm:ss (if switch is given without colon or argument) - 60 (minutes)

SUBMIT Command Switches (Cont.)

/TPLOT:n — limits to n the maximum number of minutes of plotter time allowed for the job
Default n - 200

/UNIQUE:NO (or 0)
/UNIQUE:YES (or 1) — declares, if two or more batch jobs are to use the same connected directory, whether they must be run at separate times
Default - YES

/USER:user name — specifies the user who is to be the owner of the batch request. For privileged users only.

Output

Jobname, Request ID, and Time Limit

As soon as you complete a valid SUBMIT command, the system responds by printing, on your terminal, the jobname, request ID, and time limit for the job. Each control file you submit is a separate batch request, and is described on a separate line.

Characteristics

Ordinary Operation - No Switches

For most purposes you can use the SUBMIT command with just a filespec, or a series of filespecs, for arguments.

Switch Defaults Set by System Manager

The defaults shown in the list of switches are correct for most user sites. However, your system manager can change some of these default settings. The changes go into effect during system installation. The switches most commonly affected are: /CARDS, /FEET, /OUTPUT, /PAGES, /PRIORITY, /TIME, and /TPLOT.

Disposition of Log Files

The three SUBMIT command switches /BATCH-LOG, /LOGDISPOSITION, and /OUTPUT, control what happens to the log file of your batch job.

Where Written

The log file is always written as the job runs, either to the batch job's connected directory, or to a directory specified as argument to the /LOGNAME switch, or to the system's output spooling area (it is written to the spooling area only if you give the /BATCH-LOG:SPOOL switch). If the /DESTINATION-NODE switch is also given, the log file will be written into a directory or spooling area at the specified node. Remember that a batch job's connected directory is ordinarily defined to be your connected directory at the time of the SUBMIT command; privileged users may specify a batch job's connected directory by using the /CONNECTED-DIRECTORY switch.

How Written, When Printed

The /BATCH-LOG switch's APPEND and SUPERSEDE arguments describe the manner in which the log file is to be written: either it is appended to any existing file of the same name (usually produced by a previous running of the batch job) or it is written as a new generation of the file. The /LOGDISPOSITION switch tells the system whether to keep this file, wherever it is written, once the batch job is finished. The /OUTPUT switch specifies when you want a listing of the log file to be printed: either always, or never, or only if errors occur when the batch job is run. By using combinations of these switches you can cause any desirable action. Giving /OUTPUT:ALWAYS along with /LOGDISPOSITION:DELETE allows a record of your batch job with only a temporary use of your disk area, and permits you to monitor the progress of the job while it is running (give TYPE commands to view the file at your terminal). Giving just the /BATCH-LOG:SPOOL switch allows a record without any use of your disk area, although then you must wait for the printed output to see this record.

Hints

Using SET DEFAULT SUBMIT

If there are switches that you always or usually supply when using SUBMIT, give the SET DEFAULT SUBMIT command to establish them as defaults for the remainder of your terminal session. The switches will then behave as if you had typed them directly after the word SUBMIT. You can supersede any of these default switches by actually supplying the switch, with another value, when you give the SUBMIT command.

For Future Terminal Sessions

Put SET DEFAULT SUBMIT commands into a file of specification COMAND.CMD or LOGIN.CMD in your log-in directory if you want these default switches to be in effect for batch jobs you submit during future terminal sessions as well. If both files exist, the system reads LOGIN.CMD first.

For Nested Batch Jobs Only

Put SET DEFAULT SUBMIT commands into a file of specification BATCH.CMD in your log-in directory if you want them to be in effect at the log-in time of a "nested" batch job only, that is, a batch job started by a SUBMIT command within the control file of another of your batch jobs. Note, however, that the system also reads COMAND.CMD at the log-in time of a batch job if the file exists in your log-in directory. It reads this file after BATCH.CMD.

More Information

For more information about batch jobs, see the TOPS-10/20 Batch Reference Manual.

Restrictions

Access Rights for Batch Jobs

For Specifying Control Files and Log Files

You cannot use the ACCESS command to obtain the right to submit control files from another directory, because your batch jobs are logged in with rights only to your connected directory and to directories to which you have access as a group member. The control file, if not in your connected directory, must be in one to which you have read access as a group member; the log file specification, if you give one, must be for your connected directory or for one to which you have write access as a group member.

For Use Within the Batch Job

Although it is possible to give CONNECT and ACCESS commands within a batch job to obtain rights beyond those mentioned above, you may then have to include passwords in the job's control file. Because this practice could endanger system security, it is generally best to establish and rely on appropriate group rights when preparing batch jobs for submission.

Effect on Memory and Terminal

The SUBMIT command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

CANCEL	for withdrawing SUBMIT requests
INFORMATION BATCH-REQUESTS	for examining in the batch input queue
MODIFY	for changing SUBMIT requests before processing has begun
SET DEFAULT SUBMIT	for establishing default switches for subsequent SUBMIT commands

Examples

1. Submit a control file to begin a batch job.

```
@SUBMIT DIFS.CTL
[Job DIFS Queued, Request-ID 461, Limit 0:05:00]
@
```

2. Submit two control files (specifying only the filenames) in the same command. Then use the INFORMATION BATCH-REQUESTS command (with the USER switch) to examine your entries in the batch input queue.

```
@SUBMIT SUMS, DIFS
[Job SUMS Queued, Request-ID 629, Limit 0:05:00]
[Job DIFS Queued, Request-ID 630, Limit 0:05:00]
@INFORMATION BATCH-REQUESTS /USER

Batch Queue:
Job Name  Req#  Run Time  User
--------- ----  --------- ---------
* SUMS     629  00:05:00  C.BURKE In Stream:2
    Started at 15:21:01
  DIFS     630  00:05:00  C.BURKE
There are 2 Jobs in the Queue (1 in Progress)

@
```

3. Connect to another user's directory, then submit two of his control files. Prevent the printing of a log file for one job, and allow the second job's to be printed only if errors occur within the job; make both jobs restartable. Request an inclusive listing of your entries in the batch queue - notice that the jobs are logged in under your own user name, although the log files will be stored in user Holland's directory. Note also that an asterisk (*) indicates a job currently in progress.

   Connect back to your directory and submit one of your own control files, specifying a particular jobname, then check on it.

```
@CONNECT <HOLLAND>
Password:_____
@SUBMIT /RESTARTABLE:YES FLOTST.CTL/OUTPUT:NOLOG, LODT
ST.CTL/OUTPUT:ERRORS
[Job FLOTST Queued, Request-ID 464, Limit 0:05:00]
[Job LOOTST Queued, Request-ID 465, Limit 0:05:00]
@INFORMATION BATCH-REQUESTS /ALL/USER

Batch Queue:
Job Name   Req#   Run Time   User
--------   ----   --------   --------
* FLOTST    464   00:05:00   C.BURKE In Stream:2   /Uniq:Yes
               /Restart:Yes   /Assist:Yes   /Seq:1993
    Started at   8:40:38
  LOOTST    465   00:05:00   C.BURKE /Uniq:Yes   /Restart:Yes
               /Assist:Yes   /Seq:1994
There are 2 Jobs in the Queue (1 in Progress)

@CONNECT MISC:<C.BURKE>
@SUBMIT SUMS/JOBNAME:1-SUMS
[Job 1-SUMS Queued, Request-ID 466, Limit 0:05:00]
@INFORMATION BATCH-REQUESTS /ALL/USER

Batch Queue:
Job Name   Req#   Run Time   User
--------   ----   --------   --------
* 1-SUMS    466   00:05:00   C.BURKE In Stream:2   /Uniq:Yes
               /Restart:No   /Assist:Yes   /Seq:1995
    Started at 8:41:29
There is 1 Job in the Queue (1 in Progress)

@
```

SUBMIT (Cont.)

4. Give a SET DEFAULT command to ensure that your batch jobs will be run after 5:00 P.M. unless you specify otherwise. Submit a batch job and check that this default is in effect. Then use a MODIFY command to delay the starting time of this job till 11:00 P.M. Finally, give the CANCEL command to withdraw the batch request entirely.

```
@SET DEFAULT SUBMIT /AFTER:17:00
@SUBMIT SUMS
[Job SUMS Queued, Request-ID 467, Limit 0:05:00]
@INFORMATION BATCH-REQUESTS /USER

Batch Queue:
Job Name   Req#   Run Time   User
--------   ----   --------   --------
  SUMS      467   00:05:00   C.BURKE /After: 9-Nov-79 17:00
There is 1 Job in the Queue (None in Progress)

@MODIFY BATCH 467 /AFTER:23:00
[1 Job Modified]
@INFORMATION BATCH-REQUESTS /USER

Batch Queue:
Job Name   Req#   Run Time   User
--------   ----   --------   --------
  SUMS      467   00:05:00   C.BURKE /After: 9-Nov-79 23:00
There is 1 Job in the Queue (None in Progress)

@CANCEL BATCH 467



[1 Job Canceled]
@
```

SYSTAT

Function

The SYSTAT command prints information about the current state of the system.

Format*

```
@SYSTAT,
@@subcommand
@@ .
   .
   .
```

where

```
                means  that, after  a comma, you  can give one  or
@@              more subcommands on successive lines
@@ .
   .
   .

subcommand      is  a  keyword,  chosen  from  the  list  below,
                indicating your choice of SYSTAT command options
```

Defaults are shown in the list of subcommands

Summary of SYSTAT Command Subcommands (defaults in boldface)

ALL
CLASS
CONTROLLING
DIRECTORY
HEADER
JOB job number n
LIMIT
LINE octal line number, or DETACHED
LPT
NO subcommand name, or OPERATOR, or .
OUTPUT file specification
PROGRAM
STATE
SYSTEM
TIME
USER user name
WHAT
WHERE
WHO

* For information on the in-line subcommand format, refer to the "Hints" section below.

SYSTAT (Cont.)

SYSTAT Command Subcommands

ALL — gives all available SYSTAT information

CLASS — prints the scheduler class in which each job is running; the share of total CPU time allotted to the job, expressed as a decimal fraction; and the fraction of total CPU time actually used by the job. A job's actual use may be larger than its allotted share if some jobs in its class are inactive; it can be larger still if other classes are inactive and this unused fraction of CPU time is being allocated among active jobs.

CONTROLLING — prints, in the column headed CJB, the number of the controlling job (if any), that is, a job owning a PTY (pseudo-terminal) that controls the job being described; when used in a SYSTAT command requesting descriptions of particular jobs, this subcommand causes jobs controlled by these jobs to be described also.

DIRECTORY — requests the name of the directory to which each job is connected, if not the job's log-in directory

HEADER — calls for a headline identifying the columns of information printed

Default (unless you are requesting information about specific users, jobs, or lines only; in such cases the default is NO HEADER.)

JOB n — restricts output to description of job number n; can be used more than once.

LIMIT — prints any time limit set for each job

LINE octal line number or DETACHED

restricts output to description of the job attached to the given line number, or to descriptions of all detached jobs; can be used more than once.

LPT — sends output to the line printer instead of to your terminal

SYSTAT Command Subcommands (Cont.)

NO

. (period)
CLASS
CONTROLLING
DIRECTORY
HEADER
LIMIT
OPERATOR
STATE
SYSTEM
TIME
WHAT
WHERE
WHO

eliminates the indicated category of information, when used with one of the keywords shown (. refers to your own job)

OUTPUT filespec

sends the output information to the file you specify, instead of to your terminal
Default filespec - SYSTAT.LST

PROGRAM program name

restricts SYSTAT output to descriptions of jobs using the program (or TOPS-20 command) specified. The argument you supply must be of six or fewer characters.

STATE

prints the current state of each job, i.e., RUN (running), or TI (waiting for terminal input)

SYSTEM

begins output with system-wide information, i.e., the first two lines of reqular output. If SYSTEM is the only subcommand given, SYSTAT output is restricted to this.
Default (unless you give subcommands requesting information about specific users, jobs, or lines only; in such cases the default is NO SYSTEM.)

TIME

prints the accumulated runtime (CPU time) for each job

USER user name

restricts output to descriptions of jobs logged in under the given user name; can be used more than once.

WHAT

prints the name of the program that each job is running; given explicitly only with subcommand NO, to restrict SYSTAT output.
Default

WHERE

prints the line number associated with each job; given explicitly only with subcommand NO, to restrict SYSTAT output.
Default

WHO

prints the user name under which each job is logged in; given explicitly only with subcommand NO, to restrict SYSTAT output.
Default

SYSTAT (Cont.)

Output

Sample of SYSTAT Output

The SYSTAT command prints on your terminal up to 12 columns of information about all the jobs on the system. Below is a sample of the output you would receive in response to a SYSTAT command that eliminates the two rightmost columns (User and <Directory>):

```
@SYSTAT ALL NO WHO NO DIRECTORY
 Tue 14-Aug-79   15:48:37   Up 1:12:59
 45+11 Jobs   Load av (class 0)   3.70   3.54   3.71

 Job  CJB Line  Program State    Time    Cls  Shr    Use   Limit
   5        25   TV      RUN    0:01:02   0  0.01   0.03
   7         6   TV      TI     0:00:35   0  0.01   0.02
  13   35  217   EXEC    RUN    0:01:02   1  0.15   0.00
   .    .    .     .      .        .      .    .      .
   .    .    .     .      .        .      .    .      .
   .    .    .     .      .        .      .    .      .
```

First you see the current date and time (in 24-hour notation: the sample above was obtained 37 seconds after 3:48 P.M.), and the length of time since the system was started (here, just over 1 hour).

The second line displays the number of user jobs (45) and operator jobs (11) currently running. The next three numbers are the "load averages" for the system: these are weighted averages of the number of runnable processes on the system over the last minute, 5 minutes, and 15 minutes, respectively. (If class scheduling is enabled, the three load averages are the average number of jobs having at least one runnable process, and apply to the class in which your job is running.) If you are about to start a job requiring 5 minutes of CPU time, and the load average remains stable over the period in question, i.e., becomes 4.54 (3.54 + your job = 4.54), then you can count on your job's getting about 1/4.54 of your class's share of the system's attention. If your class is assigned one third of the system's CPU time and you do not receive any windfall (unclaimed CPU time), your job will be finished in a little over one hour.

After this comes the line of headings labeling each column of data that follows. All but the User and <Directory> columns of information appear in the sample above, describing all jobs (rows). The unmodified command SYSTAT gives only columns 1, 3, 4, and 11 (User) for each job; by using appropriate subcommands you can select the categories of information presented, as well as the specific jobs examined. (The Class (Cls) and Share (Shr) categories appear only if class scheduling is enabled.) User jobs, both timesharing and batch, are listed first (in ascending order by job number), and then, after a blank line, operator jobs. The number of the job attached to your own terminal appears with an asterisk (*) next to it in the Job column.

Sending Output Elsewhere

By giving the OUTPUT subcommand you can direct SYSTAT information to a file instead of to your terminal. The subcommand LPT sends the information to the line printer instead of to your terminal.

Characteristics

Log-in Not Necessary

You do not have to be logged in to give the SYSTAT command.

Hints

Reducing Charges for SYSTAT

You can use subcommands to restrict the jobs surveyed and the information requested; this will reduce the CPU time needed to process the command. If you decide to cut off the SYSTAT output before it is done, give CTRL/Cs rather than a CTRL/O. This stops not only the output but also the CPU charges for producing it.

Giving Subcommands as Arguments on the Command Line

To simplify your typing, SYSTAT accepts subcommands as arguments given on the same line as the command, subject to these rules:

There will be no @@ prompt: simply type a space between successive subcommands and between subcommand names and arguments.

To get information about one or more specific job numbers, give the numbers only; do not type JOB.

To get information about one or more specific user names, give the names only; do not type USER. But if the user name is by coincidence the same as a SYSTAT command argument, you must use the subcommand mode to request information about his job.

To get information about one or more specific log-in directories, give the directory names.[1]

To get information about your own (attached) job only, give a period (.) as argument.

[1] For specific connected directories, specify the directory names (and structures, if not the public structure) along with either the ALL or DIRECTORY subcommand.

To get information about all other jobs logged in under your user name, give your user name and NO . as arguments.

The system will not accept the OUTPUT subcommand in this format; use the subcommand mode instead.

Special Cases

OPERATOR as a User Name

You can request or refuse information about operator jobs by treating OPERATOR as a user name. The system accepts these commands:

```
@SYSTAT OPERATOR
```

and

```
@SYSTAT,
@@USER OPERATOR
```

as well as the special commands

```
@SYSTAT NO OPERATOR
```

and

```
@SYSTAT,
@@NO OPERATOR
```

Effect on Memory and Terminal

The SYSTAT command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION	for finding out other information about the system

Examples

1. Find out the status of all jobs on the system. (Your current (attached) job is marked with an asterisk (*).)

```
@SYSTAT
 Fri 1-Jun-79 12:28:25 Up 33:36:17
 7+2 Jobs    Load av (class 0)    1.97    2.12    2.60

Job   Line     Program    User
  3     44     EXEC       R.CRISS
  5     56     MACRO      D.SCHEIFLER
  8    DET     NVTTMP     Not logged in
  9    103     TV         FORTMILLER
 11     57     TV         SCOHEN
 14*   207     EXEC       LATTA
 20    114     TV         HARDY
 51     41     NEWRUN     LATTA

  7    DET     PERF       OPERATOR
 46      3     DUMPER     OPERATOR

@
```

2. Determine how much CPU time has been charged to the jobs of two users on the system.

```
@SYSTAT,
@@TIME
@@USER KONEN
@@USER ALUSIC
@@
  27    66    EXEC    0:00:01    ALUSIC
  43    11    EXEC    0:00:02    KONEN
@
```

3. Repeat Example 2 by giving the subcommands as arguments on the same line.

```
@SYSTAT TIME KONEN ALUSIC
  27    66    EXEC    0:00:01    ALUSIC
  43    11    EXEC    0:00:02    KONEN
@
```

4. Find out who is using line 11.

```
@SYSTAT LINE 11
  43    11    EXEC    KONEN
@
```

SYSTAT (Cont.)

5. Ask for information about jobs 5 and 45.

```
@SYSTAT 5 45
   5     56     MACRO    D.SCHEIFLER

  45     205    PTYCON   OPERATOR
@
```

6. Set a time limit of 4 seconds for your attached job, then ask for complete information, including headings, for the job. (The period (.) specifies your attached job.) The value reported under the Limit heading is actually the sum of the time limit you set (4 seconds) and the amount of CPU time already used at the time of your SET command (2 seconds). This CPU time is reported as 2 seconds under the Time heading because you gave the SYSTAT command immediately after SET.

```
@SET TIME-LIMIT 4
@SYSTAT ALL HEADER .
 Job    CJB   Line    Program  State   Time     Cls   Shr   Use
Limit     User,<Directory>
  14*   51    207     EXEC     RUN     0:00:02    0   0.02  0.02
0:00:06 LATTA, MISC:<LATTA>
@
```

7. Ask for system-wide SYSTAT information only.

```
@SYSTAT SYSTEM
 Fri 1-Jun-79 12:35:44  Up 33:43:36
 18+15 Jobs    Load av (class 0)   5.19    3.36    2.92
@
```

8. Find out only which programs are in use.

```
@SYSTAT NO WHO NO WHERE NO SYSTEM
  Job        Program
    2        EXEC
    3        EXEC
    4        EXEC
    5        MACRO
    6        VTECO
    8        NVTTMP
    9        EXEC

   13        OPLEAS
   16        LPTSPL
   26        OPR
   28        BATCON
@
```

9. Ask for a list of jobs controlled by job 51. (Your attached job, marked with an asterisk (*), happens to be one of these; job 51 itself is the other.)

```
@SYSTAT 51 CONTROLLING
  14*   51   207   EXEC     LATTA
  51          41   NEWRUN   LATTA
@
```

TAKE

Function

The TAKE command tells the system to process TOPS-20 commands stored in the specified file.

Format

```
@TAKE (COMMANDS FROM) filespec1 (LOGGING OUTPUT ON) filespec2,
@@subcommand
```

where

filespec1 — is the specification of the file containing the commands to be processed
Default file type - .CMD

filespec2 — is the name of the file or device you want to receive any output of the commands. **This field will be removed in the next major release of** TOPS-20. You are encouraged to begin using the new LOG-FILE subcommand (see below) now.
Default filespec2 - TTY: (your own terminal)

@@ — means that after a comma you can type one of the subcommands below, indicating your choice of TAKE command options

subcommand — can be one or more of these:

- ALLOW — which tells the current level of TOPS-20, for the remainder of the terminal session (not merely the current command), to continue processing a command file if it encounters errors

- DISALLOW — which tells the current level of TOPS-20, for the remainder of the terminal session (not merely the current command), to ignore any remaining commands in a command file after it encounters an error in the file
  Default

- ECHO — which tells the system to print (on your terminal or in the specified file) the commands that it carries out while executing the current TAKE command. Ordinarily only the output, if any, produced by the commands is printed.

TAKE (Cont.)

NO ECHO — which tells the system not to print the commands that it carries out while executing the current TAKE command. A final message is sent, however, indicating whether all the commands were executed. See also Hints - Suppressing the Final Message, below.
Default

LOG-FILE filespec — which tells the system to save the output from the current TAKE command in the specified file. Note that use of this subcommand in place of "filespec2" is optional in TOPS-20 Version 5; "filespec2" will be removed in a future software release, and use of LOG-FILE will then be required.

Output

The output from a TAKE command consists of the output for each command in the command file you specify as argument, followed by the message, End of filespec, that indicates successful execution of all the commands in this file.

Characteristics

Running Programs From a Command File

If you put commands that run programs (including the PUSH command) into a command file, and these programs ask for arguments, you must be ready to type in these arguments at your terminal. Only TOPS-20 commands and command arguments can be put into a command file executed by the TAKE command.

Hints

Suppressing the Final Message

If you want to suppress the final message (of the form, End of filespec) that indicates successful execution of a command file by TAKE, give a TAKE command with no arguments as the last line of your command file.

Special Cases

Nested TAKE Commands

In the case of nested TAKE commands (those given as commands within command files), the destination for output of commands given in an inner command file will default to that specified or assumed for the output of commands given in the nearest surrounding command file.

Effect on Memory and Terminal

The TAKE command affects memory and your terminal according to the commands stored in the command file you specify as argument.

Related Commands

INFORMATION commands — (when put into a command file) for tracing the progress of TAKE

LOGIN — for logging in; reads LOGIN.CMD then COMAND.CMD, in your log-in directory.

PUSH — for obtaining a new level of TOPS-20; reads COMAND.CMD in your log-in directory.

SUBMIT — for processing command files that run programs and contain program commands as well as TOPS-20 commands; reads BATCH.CMD, then COMAND.CMD, in your log-in directory.

Examples

1. Process a command file.

```
@TAKE BACKUP.CMD
 End of BACKUP.CMD.1
@
```

2. Create a command file to report system statistics, then give the TAKE command with this filename as argument; send the output to the line printer. Check for this listing as it is being printed.

```
@CREATE STATUS.CMD
Input: STATUS.CMD.1
00100   INFORMATION DISK-USAGE
00200   INFORMATION MONITOR-STATISTICS
00300   INFORMATION SYSTEM-STATUS
00400   INFORMATION MEMORY-USAGE
00500   SYSTAT ALL
00600   $
*EU

@TAKE STATUS LPT:
 End of STATUS.CMD.1
@INFORMATION OUTPUT-REQUESTS /USER


Printer Queue:
Job Name  Req#  Limit  User
--------  ----  -----  ------
  EXEC     507     27  LATTA
There is 1 Job in the Queue (None in Progress)

@
```

TALK

Function

The TALK command links your terminal to another user's terminal.

Format

```
@TALK (TO) argument

where

argument     is either a user name or a terminal line number
```

Characteristics

Other Job Not Affected

As soon as you give a successful TALK command, both terminals begin printing both users' input as well as the system's responses to that input. Each job, however, will receive input from its own terminal only.

Ending TALK

To end a conversation link between terminals, either user can give the BREAK command.

Refused TALK

Ordinarily you cannot contact a user with TALK if his terminal is set to refuse links. In such a case your TALK command causes a series of CTRL/G signals at both terminals - usually ringing bells or high-pitched beeps. However, if you have Wheel or Operator capabilities enabled, you can talk to any user.

Maximum of Four Terminals

By using TALK commands you can join up to four terminals at once for sharing displays or printout.

Hints

Signaling a Linked User

Once you have established links with another user's terminal via the TALK command, you can get his attention by typing a series of CTRL/Gs. Depending on the kind of terminal he has, these will be reproduced as ringing bells or high-pitched beeps. This action can be especially useful when establishing links with the owner of a display terminal, as display terminals are silent in ordinary operation.

Special Cases

User Has More Than One Job

If more than one job is logged in under the user name you specify, the system responds with a list of that user's terminal line numbers and the programs being run. Type your choice of terminal line number (if possible, one running the TOPS-20 command processor (EXEC)) after the TTY: prompt.

Talking to a Batch Job or PTYCON Job

When you link to a PTY (pseudo-terminal) to talk to the owner of a batch job or PTYCON job, the system informs you of this with a message, to which you must reply with a carriage return to confirm the link. To decline the link, give a CTRL/C. See also Warning, Talking to a Batch Job, below.

Warning

Talking to a Batch Job

Use caution when communicating through a PTY (pseudo-terminal) that is controlling a batch job: do not send a question mark (?) or percent sign (%), because these characters can be attributed to errors occurring within the job. Also, if an error actually does occur in the batch job and the batch system's question mark is displaced (by your remarks) from the beginning of a line, the system may not recognize it as an error.

Talking Between a VT100 and a VT52

If links between VT100 and VT52 terminals are established using a TALK (or ADVISE) command, the VT52 may function improperly during or after the linked interval (e.g., by requiring frequent CTRL/Q commands to print multiple lines of output). Turning the terminal off and then on again (after the linked interval) will correct this problem.

Effect on Memory and Terminal

The TALK command does not affect memory and leaves your terminal at TOPS-20 command level.

TALK (Cont.)

Related Commands

ADVISE	for sending commands to another user's job
BREAK	for ending communications links involving your terminal
RECEIVE LINKS	for allowing other users to talk to you
REFUSE LINKS	for preventing other users from talking to you
REMARK	for telling the system to regard your terminal input as comment only

Examples

1. Give the TALK command to establish links to another user.

```
@TALK H.DAVIES

LINK FROM LATTA, TTY 230

@
```

2. Try to talk to a user who has given the REFUSE LINKS command, then use the MAIL program to send your message.

```
@TALK GEBHARDT
?Refused, use "MAIL" to send mail to user
@MAIL
To: GEBHARDT
CC: LATTA
Subject: HUNCH
    .
    .
    .
@
```

3. Talk to another user, giving the REMARK command immediately after TALK. (The other user's reply must still be preceded by semicolons (;) or exclamation marks (!).) Give a CTRL/Z to end REMARK before typing the BREAK command to end the conversation.

```
@TALK CARNAVON

LINK FROM LATTA, TTY 230
@REMARK
Type remark. End with CTRL/Z.
WHERE DO I PUT "REQMD" RECORDS AFTER EXTRACTING THE ID'S?
@;in <accts>deft-77.cbl
@;you should have group access there...
THANKS
^Z

@BREAK
@
```

4. Give the TALK command to establish links to a user who has 3 jobs on three different terminals; choose one of the terminals running the TOPS-20 command processor.

```
@TALK MCKAY
 TTY19, DUMPER
 TTY26, EXEC
 TTY27, EXEC
TTY: 27

LINK FROM LATTA, TTY 230
@
```

TDIRECTORY

Function

The TDIRECTORY (Time-ordered DIRECTORY) command is equivalent to the DIRECTORY command with the subcommands CHRONOLOGICAL (BY) WRITE, REVERSE (SORTING), and TIMES (AND DATES OF) WRITE. Use the same format and subcommands with TDIRECTORY as with DIRECTORY. For further information, see the DIRECTORY command description in this manual.

When used with magnetic tapes, the TDIRECTORY command is equivalent to DIRECTORY for magnetic tapes.

Examples

1. Give a TDIRECTORY command, truncating output with a CTRL/C after the first few (most recent) files are displayed.

```
@TDIRECTORY

                   Write


   MISC:<LATTA>
 TBATCH.CMD.1     10-May-79 13:11:57
 B.DIRECTORY.1      9-May-79 12:54:00
 A.DIRECTORY.1      2-May-79 13:14:52
 T.CMD.1        ^C
@
```

2. Access another user's directory, and request a time-ordered directory listing of all his files of a certain name.

```
@ACCESS <DEVRIES>
Password:
@TDIRECTORY <DEVRIES>SYSTEM.*

                   Write


   MISC:<DEVRIES>
 SYSTEM.MEM.1     19-May-79 09:03:48
   .TXT.1         19-May-79 09:02:08
   .RNO.1         19-May-79 09:02:00

 Total of 3 files
@END-ACCESS <DEVRIES>
@
```

TERMINAL

Function

The TERMINAL command lets you specify many of the operating characteristics of your terminal.

Format

```
@TERMINAL (MODE IS) argument
```

where

argument   is a keyword, chosen from the list below, representing your choice of TERMINAL command options; some arguments further require a decimal number to complete their meaning.

Summary of TERMINAL Command Arguments (defaults in boldface)

```
33
35
37
EXECUPORT
FLAG
FORMFEED
FULLDUPLEX
HALFDUPLEX
HELP
IMMEDIATE
INDICATE
LA30
LA36
LA38
LA120
LENGTH n      Default n - 66
LINE-HALFDUPLEX
LOWERCASE
    (
    |  FLAG
    |  FORMFEED
    |  IMMEDIATE
    |  INDICATE
NO  )  LOWERCASE
    |  PAGE
    |              { END-OF-PAGE
    |  PAUSE       { COMMAND
    |  RAISE
    |  TABS
    (
```

TERMINAL (Cont.)

```
PAGE
        ( CHARACTER x y
PAUSE  {  END-OF-PAGE
        ( COMMAND

RAISE
             (      50
             |      75
             |     110
             |     134
             |     150
             |     200
SPEED       {      300
             |     600
             |    1200
             |    2400
             |    4800
             (    9600

SYSTEM-DEFAULT
TABS
TERMINET
TI
TYPE   0-36
VK100
VT05
VT50
VT52
VT100
VT125
WIDTH  n      Default n - 72
```

TERMINAL Command Arguments

33 informs the system that your terminal is a Teletype Model 33, which

- does not have a formfeed or tab mechanism

- prints lowercase letters as uppercase

- needs extra time to print tabs and certain paper-moving characters (formfeed and vertical tab)

- has a line width of 72

- has a page length of 66

35 informs the system that your terminal is a Teletype Model 35, which has the same characteristics as a Model 33, except that it has a formfeed and tab mechanism

TERMINAL Command Arguments (Cont.)

37

informs the system that your terminal is a Teletype Model 37, which has the same characteristics as a Model 33, except that it prints lowercase letters

EXECUPORT

informs the system that your terminal is an EXECUPORT, which

> does not have a formfeed or tab mechanism
>
> prints lowercase letters
>
> needs extra time to perform a carriage return
>
> has a line width of 80
>
> has a page length of 66

FLAG

instructs the system to print a single quotation mark (') before it prints an uppercase character. This takes effect only if you also set the NO LOWERCASE parameter.

FORMFEED

informs the system that your terminal has a formfeed mechanism; otherwise the system simulates formfeeds by printing the correct number of linefeeds (set by the TERMINAL LENGTH command) if you have set TERMINAL NO INDICATE, or by printing an ^L if you have set TERMINAL INDICATE.

FULLDUPLEX

instructs the system to send to your terminal each character as the program reads it; your terminal does not print what you type until the system sends the character back to the terminal. See also IMMEDIATE.

> Default

HALFDUPLEX

inhibits the system from sending to your terminal each character, and assumes that your terminal will print each character itself; causes echoing of format control characters (e.g., TAB and linefeed). Be sure also to set any corresponding switch physically located on your terminal.

HELP

prints information about the TERMINAL command

IMMEDIATE

instructs the system to echo each character as soon as you type it, instead of waiting until the program receives the character. Immediate echoing has effect only when the FULLDUPLEX parameter is also set.

TERMINAL Command Arguments (Cont.)

INDICATE — instructs the system to print an ^L instead of advancing the proper number of lines whenever encountering a formfeed or CTRL/L (ASCII character 14)

Default

LA30 — informs the system that your terminal is a Digital Equipment Corporation LA30, which

does not have a formfeed or tab mechanism

prints lowercase letters as uppercase

needs extra time to perform a carriage return, linefeed, tab and formfeed

has a line width of 80

has a page length of 66

LA36 — informs the system that your terminal is a Digital Equipment Corporation LA36, which

does not have a formfeed or tab mechanism

prints lowercase letters

has a line width of 132

has a page length of 66

LA38 — informs the system that your terminal is a Digital Equipment Corporation LA38, which

does not have a formfeed mechanism

prints lowercase letters

has a line width of 132

has a page length of 66

LA120 — informs the system that your terminal is a Digital Equipment Corporation LA120, which

prints lowercase letters

has a line width of 132

has a page length of 66

TERMINAL Command Arguments (Cont.)

LENGTH n

sets the number of lines printed on each page. (If you have TERMINAL PAUSE END-OF-PAGE set as well, the system stops after printing n lines and continues only when you type CTRL/Q.) If you set the page length to 0, the system stops printing only when you type CTRL/S (as long as TERMINAL PAUSE COMMAND is in effect also); it does not automatically stop at the end of a page.
Default n - 66

LINE-HALFDUPLEX

inhibits the system from sending to your terminal each character, and assumes that your terminal will print each character itself; does not cause echoing of format control characters (e.g., TAB and linefeed).

LOWERCASE

tells the system that your terminal handles lowercase output characters properly, by printing either the lowercase character or the corresponding uppercase character. When NO LOWERCASE is set, the system converts lowercase output characters to the appropriate uppercase characters before sending them. See also the FLAG and RAISE parameters.
Default

NO argument

reverses any of the arguments FLAG, FORMFEED, IMMEDIATE, INDICATE, LOWERCASE, PAGE, PAUSE, RAISE, and TABS
Default - NO FLAG, NO FORMFEED, NO IMMEDIATE, NO PAUSE END-OF-PAGE, NO TABS

PAGE n

instructs the system to stop printing when it reaches the end of a page, or when you type a CTRL/S. Continue the output by typing a CTRL/Q. To set the page length, give the number n or give a TERMINAL LENGTH command. If you set the page length to 0, the system stops printing only when you type a CTRL/S.
Default n - argument of any TERMINAL LENGTH command given in the current terminal session, or the default page length for your terminal type

TERMINAL Command Arguments (Cont.)

```
        ⎧CHARACTER x y
  PAUSE ⎨END-OF-PAGE
        ⎩COMMAND
```

instructs the system to stop sending output whenever it has sent a full page (END-OF-PAGE) or whenever you type CTRL/S (COMMAND) or x (CHARACTER).

For argument END-OF-PAGE to stop your output, argument COMMAND must also be in effect. You continue the output by typing CTRL/Q or the y parameter of the CHARACTER argument.

For argument CHARACTER to stop your output, the COMMAND and END-OF-PAGE arguments must be in effect. With the CHARACTER argument, you continue output by typing the y parameter. You can specify x and y in various ways: as the octal ASCII code for any character or control key; as any printing character in double quotes (" "); as the word "control" followed by the printing representation of a control character in double quotation marks (for example, CONTROL "A"); and as the word "space" to specify the space bar. If you specify x and y to be the same, or if you omit y, you get a toggle effect. You can specify CTRL/S and CTRL/Q as x and y parameters, respectively, only on local terminals. (Network terminal connections do not allow for CTRL/S and CTRL/Q.) But even some local terminals require that you select characters other than CTRL/S and CTRL/Q, for example, the VT125 and the VT100 with the printer port option.

The default values for x and y are CTRL/S and CTRL/Q for local terminals, and CTRL/A/CTRL/A for network terminals. You can achieve consistency between local and network terminals by placing the same TERMINAL PAUSE CHARACTER command in your LOGIN.CMD files on the various TOPS-20 systems.

To set the page length, use the TERMINAL LENGTH command. If you set the page length to 0, the system stops sending output only when you type CTRL/S or the x parameter of the CHARACTER argument.

Default	- COMMAND	(for all terminal types)
	- END-OF-PAGE	(for display terminals, for example, VT05, VT50, VT52, VT100)
	- CHARACTER	(for all terminal types)

TERMINAL Command Arguments (Cont.)

RAISE

instructs the system to interpret all lowercase terminal input as the corresponding uppercase characters

Default

SPEED n1 n2

sets the baud rate at which the TOPS-20 monitor receives characters from your terminal (n1) and sends characters to your terminal (n2). Be sure also to set any corresponding switch physically located on your terminal.

Default n1 - 300
n2 - n1

SYSTEM-DEFAULT

informs the system that your terminal has these characteristics (ensuring an acceptable minimum level of performance for all terminal types):

does not have a formfeed or tab mechanism

prints lowercase letters

needs extra time to perform a carriage return, linefeed, tab, and formfeed

has a line width of 72

has a page length of 66

Default for terminal type

TABS

informs the system that your terminal has mechanical tab stops every eight columns. Otherwise, the system simulates the tabs by printing the correct number of spaces.

TERMINET

informs the system that your terminal is a TERMINET, which

does not have a formfeed or tab mechanism

prints lowercase letters

needs extra time to perform a carriage return, linefeed, tab and formfeed

has a line width of 72

has a page length of 66

TI

informs the system that your terminal is a Texas Instruments terminal, which has the same characteristics as an EXECUPORT

TERMINAL Command Arguments (Cont.)

TYPE n

instructs the system to treat your terminal as terminal type n, in accordance with the table below:

Terminal Type	Characteristics
0	Model 33
1	Model 35
2	Model 37
3	EXECUPORT and TI
4-7	reserved for customer use
8	TERMINET
9	IDEAL (has a TAB and FORMFEED mechanism, prints lowercase, has infinite line width and infinite page length)
10	VT05
11	VT50
12	LA30
13	VT52, except for not having tabs, and having a page length of 30; used for a Digital Equipment Corporation GT40.
14	LA36
15	VT52
16	VT100
17	LA38
18	LA120
19-34	reserved for customer use
35	VT125
36	VK100

Default - 8

VK100

informs the system that your terminal is a Digital Equipment Corporation VK100 with the same characteristics as the VT52 and VT100, plus graphics capability (both black-and-white and color).

VT05

informs the system that your terminal is a Digital Equipment Corporation VT05, which

does not have a formfeed mechanism

has a tab mechanism

prints lowercase letters as uppercase

needs extra time to perform a linefeed or formfeed

has a line width of 72

has a page length of 20

TERMINAL Command Arguments (Cont.)

VT50 — informs the system that your terminal is a Digital Equipment Corporation VT50, which

- does not have a formfeed mechanism
- prints lowercase letters as uppercase
- has a line width of 80
- has a page length of 12

VT52 — informs the system that your terminal is a Digital Equipment Corporation VT52. The system assumes the same characteristics as for a VT50 except that it prints lowercase letters, and has a page length of 24 lines instead of 12.

VT100 — informs the system that your terminal is a Digital Equipment Corporation VT100. The system assumes the same characteristics as for a VT52.

VT125 — informs the system that your terminal is a Digital Equipment Corporation VT125, which has full compatibility with the VT100 and the capability of business, laboratory, and scientific graphics in black and white or color.

WIDTH n — tells the system the width, in number of characters, of your terminal line. When the system prints a line longer than your terminal width, it prints the first n positions and advances a line to print the rest.
Default Width - 72

Characteristics

TERMINAL Commands Before Log-in

You can use TERMINAL commands, after an initial CTRL/C or carriage return but before logging in, to adjust your terminal's characteristics.

Hints

Setting Your Terminal's Speed

If the initial speed setting of your terminal line is not what you want but your terminal will function at that speed, you can give a TERMINAL SPEED command even before log-in to set the proper value. If your terminal will not work at the initial speed, ask the operator to set an appropriate value.

Using Split Speeds

If you have a terminal that allows split speeds, you can set the input and output speeds to different values. This will allow you to take advantage of fast system response, for example, without providing a needlessly fast input line. A setting of 150 2400 will accomplish this. Note that you cannot use split speeds on a terminal that is part of a DECSYSTEM-2020 system. Note also that using split speeds on VT100, VT125, or VK100 terminals may cause the "smooth scrolling" feature to function improperly. Refer to the appropriate terminal manual, for example, the VT100 User's Guide, for details.

Special Cases

Terminal Types and Defaults Peculiar to Your System

The preceding pages describe terminal types and system defaults as they are shipped with TOPS-20. However, by making changes to the monitor and the TOPS-20 command processor, your installation can add different terminal types and change the default characteristics associated with terminals. Check with your system manager to find out what changes, if any, are in effect for your system.

Terminal Speed Retained from Last Session

Although most terminal characteristics revert to default settings when you log in, the terminal line will retain the value for speed set by the last user of the line, even if he was using a different kind of terminal. However, if the system failed and was restarted after the terminal line was last used, the initial speed will be determined by the appropriate TERMINAL SPEED command in the system configuration file. Also, dial-up lines return to the speed specified in this file after every use.

Warning

Setting an Improper Terminal Speed

If you set an incorrect speed for your terminal, e.g., one that is too high, you will be unable to use it further. A TERMINAL SPEED command in the LOGIN.CMD file in your log-in directory can cause the same problem. In such a case, obtain your terminal line number if possible (the second column of SYSTAT command output consists of line numbers) and ask the operator to set an appropriate value.

Effect on Memory and Terminal

The TERMINAL command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

INFORMATION TERMINAL-MODE — for examining your current terminal settings

Examples

1. Declare that your terminal is an LA36.

```
@TERMINAL LA36
@
```

2. Do the same thing, using the corresponding numerical type.

```
@TERMINAL TYPE 14
@
```

3. Prepare your LA36 terminal for you to type in some upper- and lowercase text files on narrow paper.

```
@TERMINAL LA36
@TERMINAL NO RAISE
@terminal width 72
@
```

4. Find out your terminal's characteristics, then give the command that causes it to print a full page of blank lines when you type a CTRL/L (or when it encounters an ^L in a file it is printing on your terminal).

```
@INFORMATION TERMINAL-MOOE
 TERMINAL LA36
 TERMINAL SPEEO 300
 RECEIVE LINKS
 REFUSE AOVICE
 RECEIVE SYSTEM-MESSAGES
 TERMINAL PAUSE (ON) COMMAND
 TERMINAL NO PAUSE (ON) END-OF-PAGE
 TERMINAL LENGTH 66
 TERMINAL WIOTH 132
 TERMINAL LOWERCASE
 TERMINAL RAISE
 TERMINAL NO FLAG
 TERMINAL INOICATE
 TERMINAL NO FORMFEEO
 TERMINAL NO TABS
 TERMINAL NO IMMEOIATE
 TERMINAL FULLOUPLEX
@TERMINAL NO INDICATE
@
```

TRANSLATE

Function

The TRANSLATE command prints the project-programmer number corresponding to a directory name, or the directory name corresponding to a project-programmer number.

Format

```
@TRANSLATE (DIRECTORY) dev:<directory>

                    or

@TRANSLATE (DIRECTORY) dev:[project-programmer number]
```

where

dev:<directory>

is the name of the directory, enclosed in angle brackets, that you want translated
Default dev: - your connected structure

dev:[project-programmer number]

is the project-programmer number, enclosed in square brackets, that you want translated
Default dev: - your connected structure

Hints

Using Project-programmer Numbers

Use project-programmer numbers instead of directory names when giving file specifications to programs written for the TOPS-10 operating system. These include the assembler MACRO; the FORTRAN, COBOL, and ALGOL compilers; the linking loader LINK; and utility programs CREF (providing cross-reference information) and FILCOM (for comparing files). If you are unsure whether a system program requires project-programmer numbers, load it into memory (using the R command), give a CTRL/C to return to TOPS-20 command level, and then examine memory with the INFORMATION MEMORY-USAGE command. If the file PA1050.EXE (the TOPS-10 compatibility package) is present in memory, then the program was originally written for TOPS-10 and may require a project-programmer number where you would ordinarily give a directory name.

Avoiding Project-programmer Numbers

To avoid project-programmer numbers, define a logical name (of 6 or fewer characters) as the directory in question. Then use this logical name in place of the directory when giving file specifications. The system program will accept the logical name as a device name, and will then be using the correct directory.

Effect on Memory and Terminal

The TRANSLATE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DEFINE for defining a logical name as a directory, to avoid using a project-programmer number

Examples

1. Find out the project-programmer number associated with your connected directory.

```
@TRANSLATE <LATTA>
PS:<LATTA> (IS) PS:[4,261]
@
```

2. Verify that the project-programmer number reported in Example 1 does correspond to your directory on PS:.

```
@TRANSLATE PS:[4,261]
PS:[4,261] (IS) PS:<LATTA>
@
```

TYPE

Function

The TYPE command prints the contents of one or more files on your terminal.

Format

```
@TYPE (FILE) filespec,...
```

where

filespec	is the specification of the file you want to print on your terminal
,...	means that, after commas, you can give more file specifications

Output

Entire Contents of Files

In response to the TYPE command the system prints the entire contents of a file (up to the EOF (end-of-file) pointer), including blank lines and line numbers if there are any. If you specify more than one file, the filespec precedes the contents of each file.

Hints

Stopping TYPE Output

To stop the TYPE command, type two CTRL/Cs. A CTRL/O will also stop the output, but will not stop the processing of the command or the accumulation of CPU charges. Note that a pair of CTRL/Os causes the system to skip over part of the output and continue printing.

Effect on Memory and Terminal

The TYPE command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

COPY	for copying files to any device
EDIT	for examining specific parts of a file
PRINT	for printing files on the line printer

Examples

1. Have the system print a file on your terminal.

```
@TYPE TEST.TXT
! This is file TEST.TXT !
@
```

UNATTACH

Function

The UNATTACH command, given at one terminal, disengages another job from its terminal.

Format

```
@UNATTACH (USER) name (JOB #) number
PASSWORD:  password
```

where

name — is the user name of the job's owner

number — is the job number
Default number - the only job, or only job besides your current (attached) job, logged in under the user name you give

password — is the associated password (not requested if you are currently logged in under the same user name as the job that you are disengaging)

Characteristics

Log-in Not Necessary

You do not have to be logged in to give the UNATTACH command.

Hints

Freeing Hung Terminals

The UNATTACH command is useful for freeing a terminal that, because of program or hardware errors, is no longer under control of the user. The command UNATTACH n can be more effective than LOGOUT n for this purpose.

Effect on Memory and Terminal

The UNATTACH command does not affect memory and leaves your own terminal at TOPS-20 command level. The other job is left in its current state (usually suspended) and the disengaged terminal is left in the state before log-in.

Related Commands

ADVISE	for sending commands to another job
ATTACH	for joining another job to your terminal
DETACH	for disengaging your own job from its terminal

Examples

1. Disengage another user's job from its terminal.

```
@UNATTACH KANE
Password:______
@
```

2. From a terminal on which you have not yet logged in, give the UNATTACH command to disengage your only logged-in job from its terminal.

```
 SYSTEM 2102 DEVELOPMENT SYSTEM, TOPS-20 Monitor 4(3212)
@UNATTACH LATTA
Password:______
@
```

3. Give a SYSTAT command to find out what jobs you have running. Give the UNATTACH command for two of them (you must specify a job number for the first one so the system will know which one you mean), and check them with another SYSTAT command.

```
@SYSTAT LATTA
  28     26   EXEC      LATTA
  36*   230   EXEC      LATTA
  40     27   EXEC      LATTA
@UNATTACH LATTA 28
 [Attached to TTY26, confirm]
@UNATTACH LATTA
@SYSTAT LATTA
  28    DET   EXEC      LATTA
  36*   230   EXEC      LATTA
  40    DET   EXEC      LATTA
@
```

UNDELETE

Function

The UNDELETE command restores previously-deleted files.

Format

```
@UNDELETE filespec,...

where

filespec     is the specification of the file you want to restore
                  Default .gen - all generations of the specified
                                 files

,...         means that, after commas, you can give more file
             specifications
```

Restrictions

Erasure of Deleted Files

Ordinarily an UNDELETE command given during the same terminal session as an original deletion will recover the deleted files, unless you included the EXPUNGE subcommand to DELETE or gave a subsequent EXPUNGE command. However, if any user or a batch job logs out while connected to your directory, all deleted files are permanently erased. Also, if available disk space is low on the system, the operator or the system itself may expunge all deleted files. A system warning message is usually sent before this happens.

Special Cases

Restoring Files Deleted With CONTENTS-ONLY Subcommand.

Any files deleted by a DELETE command with a CONTENTS-ONLY subcommand are immediately expunged. You must use the RETRIEVE command to restore these to disk.

Effect on Memory and Terminal

The UNDELETE command does not affect memory and leaves your terminal at TOPS-20 command level.

UNDELETE (Cont.)

Related Commands

DELETE	for deleting files
DIRECTORY-class commands	for obtaining lists of deleted files (with DELETED subcommand)
EXPUNGE	for permanently erasing deleted files
RETRIEVE	for restoring off-line files to disk

Examples

1. Undelete a file.

```
@UNDELETE TEST.FIL
 TEST.FIL.1 [OK]
 TEST.FIL.2 [OK]
@
```

2. Access another user's directory, then restore all his deleted files of type .FIL.

```
@ACCESS <CARSON>
Password:_____
@UNDELETE <CARSON>*.FIL
 <CARSON>MEMO.FIL.1 [OK]
 <CARSON>SEARCH.FIL.1 [OK]
 <CARSON>TEST.FIL.1 [OK]
 <CARSON>VERFY.FIL.1 [OK]
@END-ACCESS <CARSON>
@
```

UNLOAD

Function

The UNLOAD command rewinds a magnetic tape until it is returned completely to the source reel, and puts the associated tape drive off line. Use UNLOAD only for tapes mounted on drives having device names of the form MTAn:.

Format

```
@UNLOAD (DEVICE) dev:
```

where

dev: is the name of the magnetic tape drive that you want to unload

Restrictions

UNLOAD With Open Files

If you have given a CTRL/C to exit from a program that has opened a magnetic tape drive and you then gave the UNLOAD command for that tape drive, the system will first ask if you want to close the associated file. You must do so for UNLOAD to succeed, but you will probably be unable to continue the program from that point because the file will now be closed.

Warning

Cannot Access Tape Again

The UNLOAD command makes it impossible to access your tape again unless it is reloaded by the operator.

Effect on Memory and Terminal

The UNLOAD command does not affect memory and leaves your terminal at TOPS-20 command level.

Related Commands

DISMOUNT	for unloading tapes mounted on devices of the form MTn:
REWIND	for rewinding a magnetic tape volume or tape set to its load point (logical beginning)

Examples

1. Unload your magnetic tape from drive MTA0:.

   ```
   @UNLOAD MTA0:
   @
   ```

VDIRECTORY

Function

The VDIRECTORY (Verbose DIRECTORY) command is equivalent to the DIRECTORY command with the subcommands LENGTH, NO HEADING, PROTECTION, SIZE, and TIMES (AND DATES OF) WRITE. Use the same format and subcommands with VDIRECTORY as with DIRECTORY. For further information see the DIRECTORY command description in this manual.

When used with magnetic tapes, the VDIRECTORY command is equivalent to the DIRECTORY command for magnetic tapes.

Examples

1. Give the VDIRECTORY command, then cut off the output with a CTRL/C.

```
@VDIRECTORY

   MISC:<LATTA>
 4-UPED.TXT.14;P777700        0 0(7)           25-Apr-79 09:58:21
 A.DIRECTORY.1;P20200         1 0(0)            2-May-79 13:14:52
 ARTIFI.CTL.7;P777700         1 215(7)         24-Apr-79 10:10:10
 B.DIRECTORY.1;P20200         1 0(0)            9-May-79 12:54:00
 C.EXE.1;P777700              3 1536(36)       13-Apr-78 04:27:59
 CONFAB.CTL.1;P777700         1 115(7)          3-May-78 13:34:37
 DIVIDE.FOR.4;P777700         1 260(7)          8-Mar-79 15:47:41
 DUMPER.MAC.1;P777700        53 134442(7)       8-Nov-78 10:47:04
 MAGNIF.CTL.2;P777700         1^C
@
```

2. Ask for a VDIRECTORY listing of certain files; include a line of headings.

```
@VDIRECTORY TEST*.FOR,
@@HEADING
@@

                             PGS Bytes(SZ)     Write

   MISC:<LATTA>
 TESTF1.FOR.8;P777700        1 115(7)          25-Apr-79 09:44:50
 TESTF2.FOR.1;P777700        1 115(7)          20-Apr-79 10:01:56
 TESTF3.FOR.1;P777700        1 115(7)          20-Apr-79 10:02:19

 Total of 3 pages in 3 files
@
```

APPENDIX A

FUNCTIONAL GROUPING OF TOPS-20 COMMANDS

This appendix lists and briefly explains all non-privileged commands in the TOPS-20 command language, grouping them in categories of similar use.

A.1 SYSTEM ACCESS COMMANDS

These commands allow you to gain and relinquish access to the system, to activate and deactivate any special capabilities you have been given, and to disengage and engage jobs to your terminal.

ATTACH	Engages a designated job to your terminal.
DETACH	Disengages your current job from your terminal.
DISABLE	Deactivates any special capabilities you have been granted.
ENABLE	Activates any special capabilities you have been granted.
LOGIN	Gains access to the TOPS-20 system.
LOGOUT	Relinquishes access to the TOPS-20 system.
UNATTACH	Disengages another job from its terminal.

A.2 FILE SYSTEM COMMANDS

The file system commands allow you to create, examine, change, and delete files.

ACCESS	Obtains ownership rights to the specified directory, as well as the group rights of the directory's owner.
APPEND	Adds contents of one or more files to another file.
ARCHIVE	Makes a permanent off-line copy of files.
BUILD	Creates, modifies, or deletes a subdirectory.
CLOSE	Closes files left open by a program, and releases unopened JFNs.

CONNECT	Connects you to the specified directory.
COPY	Duplicates files.
CREATE	Starts the EDIT program to make a new file.
DEFINE	Associates a logical name with one or more filespecs.
DELETE	Marks files for eventual erasure (disk files only), or erases the files (all other devices).
DIRECTORY	Gives information about the files in a directory.
DISCARD	Gives up the tape copy of specified on-line files.
EDIT	Starts the EDIT program to change an existing file.
END-ACCESS	Relinquishes ownership rights to the specified directory.
EXPUNGE	Permanently erases any deleted files.
FDIRECTORY	Lists all the information about files.
RENAME	Changes one or more parts of an existing file specification.
RETRIEVE	Restores off-line files to disk.
TDIRECTORY	Lists the names and write dates of files in the order of the date and time they were last changed.
TYPE	Prints files on your terminal.
UNDELETE	Restores files marked for erasure.
VDIRECTORY	Lists the names of files, as well as their protection, size, and the date and time they were last changed.

A.3 DEVICE-HANDLING COMMANDS

These commands allow you to reserve a device prior to using it, to manipulate the device, and to release it once it is no longer needed.

ASSIGN	Reserves a device for use by your job.
BACKSPACE	Moves a magnetic tape backward.
DEASSIGN	Releases a previously assigned device.
DISMOUNT	Gives up access to the specified structure or tape set.
EOF	Writes an end-of-file mark on a magnetic tape.
MOUNT	Requests use of the specified structure or tape set.
REWIND	Moves a magnetic tape backward to its load point.

SKIP Moves a magnetic tape forward.

UNLOAD Rewinds a magnetic tape until the tape is wound completely on the source reel.

A.4 PROGRAM CONTROL COMMANDS

The following commands help you run and debug your own programs.

COMPILE Translates a source program using the appropriate compiler.

CONTINUE Resumes execution of a program (e.g., one interrupted by a CTRL/C).

CREF Runs the CREF program, which produces a cross-reference listing and automatically sends it to the line printer.

CSAVE Saves in a compressed executable format the program currently in memory. (Usually SAVE is better for most purposes.)

DDT Merges the loaded debugging program (or if none, DDT) with the current program and then starts the debugging program.

DEBUG Compiles a source program, loads it with a compatible debugging program, and starts the debugging program.

DEPOSIT Sets the contents of the specified memory location.

EXAMINE Checks the contents of the specified memory location.

EXECUTE Compiles, loads, and begins execution of a program.

FORK Makes some TOPS-20 commands apply to the specified process.

GET Places an executable program in memory.

LOAD Compiles a program and loads it into memory.

MERGE Places an executable program in memory and merges it with the current contents of memory.

POP Finishes a level of TOPS-20 and returns control to the previous level of TOPS-20.

PUSH Starts a new level of TOPS-20.

R Runs a system program.

REENTER Starts the program currently in memory at the alternate entry point specified in the program's entry vector.

RESET Clears memory for the current process of your job and its inferiors.

RUN Places an executable program in memory and starts it.

SAVE Copies the contents of memory into a file in executable format.

START Begins execution of the program in memory.

A.5 INFORMATION COMMANDS

These commands return information about TOPS-20 commands, your job, and the system as a whole.

DAYTIME Prints the current date and time of day.

HELP Gives an explanatory message about specific system programs.

INFORMATION Provides information about your job and its use of available computing resources, and about the system.

SYSTAT Gives a summary of information about current jobs on the system.

TRANSLATE Tells you what project-programmer number is associated with a directory name, and vice versa.

A.6 TERMINAL COMMANDS

The terminal commands allow you to declare the characteristics of your terminal, to clear your video screen, and to control linking to another user's terminal.

ADVISE Sends whatever you type on your terminal as input to a job engaged to another terminal.

BLANK Clears your display screen and moves the cursor to line 1.

BREAK Clears communication links.

RECEIVE Allows your terminal to receive communication links, advice, or system messages from other users.

REFUSE Denies links, advice, or system messages to your terminal.

REMARK Notifies the system that your terminal is not sending commands but only comments.

SET — Establishes certain job-wide characteristics for your terminal session.

TAKE — Executes commands contained in the specified file.

TALK — Links two terminals so that each user can observe what the other user is doing, without affecting his job.

TERMINAL — Informs the system of your terminal type, and lets you determine the setting of its variable parameters.

A.7 OUTPUT COMMANDS

These commands allow you to request output listings of files on the plotter, line printer, card punch, or paper tape punch, and to examine, modify, or withdraw these requests.

CANCEL — Withdraws requests from an output queue (waiting list).

INFORMATION OUTPUT-REQUESTS — Lists entries in the output queues.

MODIFY — Changes entries in an output queue.

PLOT — Places requests in a plotter output queue.

PRINT — Places requests in a line printer output queue.

PUNCH — Places requests in a card punch or paper tape punch output queue.

A.8 BATCH COMMANDS

The TOPS-20 system also has a batch system to which you can submit jobs for execution.

CANCEL BATCH — Withdraws entries from the batch input queue (waiting list).

INFORMATION BATCH-REQUESTS — Lists entries in the batch input queue.

MODIFY BATCH — Changes entries in the batch input queue.

SUBMIT — Places a batch control file in the batch input queue.

APPENDIX B

ALPHABETICAL LIST OF TOPS-20 COMMANDS

This appendix consists of an alphabetical list of TOPS-20 commands and short descriptions of each. The varieties of argument needed to complete each command are shown next, in the order that you give them; parentheses indicate that the argument is optional or can be defaulted. Last comes the effect of the command on memory - whether it clears memory (by loading a program or by other means) or otherwise alters it, or leaves it unaffected. Use this appendix along with the question mark and recognition features to refresh your memory once you have become familiar with the contents of this manual.

Command	Function	Arguments	Effect on Memory
ACCESS	gets ownership rights to a directory	dev:<directory>, password	---
ADVISE	sends commands to another user's job	user name or terminal number	---
APPEND	adds files onto end of another file	filespecs, (subcommands)	---
ARCHIVE	requests off-line storage of files	filespecs, (subcommand)	---
ASSIGN	allocates a device for your job	device name	---
ATTACH	engages a job to your terminal	user name, (job number) (password)	---
BACKSPACE	moves a magnetic tape backward	device name, number of records or files	---
BLANK	clears your video terminal screen	---	---
BREAK	ends links made by a TALK command	(user name or line number)	---
BUILD	creates, modifies, or deletes a subdirectory	dev:<directory>, subcommands	---
CANCEL	withdraws output or batch requests	queue, jobname	---

ALPHABETICAL LIST OF TOPS-20 COMMANDS

Command	Function	Arguments	Effect on Memory
CLOSE	closes open files	JFN	---
COMPILE	translates source programs into object programs	filespecs, switches	loads comiler
CONNECT	connects your job to a directory	dev:<directory>, password	---
CONTINUE	continues a halted program	NORMALLY or STAY	---
COPY	makes copies of a file	filespec,filespec (subcommands)	---
CREATE	creates a file	(switches), filespec	loads EDIT
CREF	translates .CRF files into listings	(filespec)	loads CREF
CSAVE	stores a copy of memory in a file (in compressed format)	(filespec, memory locations)	---
DAYTIME	tells the date and time	---	---
DDT	starts a debugging program	(switches)	merges debugging program with existing memory (if necessary)
DEASSIGN	gives up a previously assigned device	device name	---
DEBUG	debugs a program	filespec, switches	loads program and debugging program
DEFINE	establishes or withdraws a logical name	logical name, search list	---
DELETE	marks files for later erasure	filespecs, (subcommands)	---
DEPOSIT	changes contents of a memory location	memory location, octal number	changes one location
DETACH	disengages a job from your terminal	(argument)	---

ALPHABETICAL LIST OF TOPS-20 COMMANDS

Command	Function	Arguments	Effect on Memory
DIRECTORY	gives information about files	(dev:<directory>, filespecs), subcommands	---
DISABLE	deactivates capabilities	---	---
DISCARD	gives up tape copy of on-line files	filespecs	---
DISMOUNT	gives up access to structure or tape set	alias or setname, switches	---
EDIT	edits existing files	(switches), filespec	loads EDIT
ENABLE	activates capabilities	---	---
END-ACCESS	terminates ownership rights to a directory	dev:<directory>	---
EOF	writes an end-of-file mark on a magnetic tape	device name	---
EXAMINE	inspects a memory location	memory location	---
EXECUTE	compiles, loads and starts a program	filespec, switches	loads compiler and/or program
EXPUNGE	erases all deleted files from a directory	(dev:<directory>, subcommands)	---
FDIRECTORY	DIRECTORY command with subcommands CRAM,EVERYTHING, and NO HEADING	(dev:<directory>, filespecs), subcommands	---
FORK	specifies what process is current	process number	---
GET	places an executable program in memory	filespec, (switches)	loads program
HELP	presents a short description of a system program	name of system program	---
INFORMATION	gives information about system and job parameters	arguments	---

ALPHABETICAL LIST OF TOPS-20 COMMANDS

Command	Function	Arguments	Effect on Memory
LOAD	compiles and loads a program	filespec, switches	loads compiler and/or program
LOGIN	begins a job	user name, password, account	---
LOGOUT	ends a job	---	clears memory
MERGE	merges an executable program with current memory	filespec, (switches)	adds program to existing memory
MODIFY	changes output or batch requests	queue, jobname, switches	---
MOUNT	requests use of structure or tape set	alias or setname, switches	---
PLOT	plots files on plotter	filespecs, switches	---
POP	returns to superior TOPS-20 command level, ending inferior TOPS-20 command level	---	clears memory of inferior process
PRINT	prints files on line printer	filespecs, switches	---
PUNCH	punches files on card punch or paper tape punch	filespecs, switches	---
PUSH	begins an inferior TOPS-20 command level	---	preserves superior memory
R	runs a system program	name of system program, (switches)	loads program
RECEIVE	allows communication with your terminal	argument	---
REENTER	starts program in memory at the restart address	---	---
REFUSE	disallows communication with your terminal	argument	---
REMARK	informs the system that you are typing only comments, not commands	---	---

ALPHABETICAL LIST OF TOPS-20 COMMANDS

Command	Function	Arguments	Effect on Memory
RENAME	changes the specification of a file	filespec, filespec	---
RESET	finishes current process and clears its memory	---	clears memory
RETRIEVE	restores off-line files to disk	filespecs	---
REWIND	rewinds a magnetic tape to its load point	device name	---
RUN	places an executable program in memory and starts it	filespec, (switches)	loads program
SAVE	stores a copy of memory in a file	(filespec)	---
SET	sets various job parameters	arguments	---
SKIP	moves a magnetic tape forward	device name, number of records or files	---
START	starts program in memory at start address	(memory location)	---
SUBMIT	submits entries (jobs) to the batch system	filespecs, switches	---
SYSTAT	gives information about system and job status	arguments, (subcommands)	---
TAKE	starts processing of a command file	filespec, (subcommands)	---
TALK	makes communication links with another user	user name or terminal number	---
TDIRECTORY	DIRECTORY command with subcommands CHRONOLOGICAL WRITE, REVERSE, and TIMES WRITE	(dev:<directory>, filespecs), subcommands	---
TERMINAL	sets various terminal characteristics	argument	---

Command	Function	Arguments	Effect on Memory
TRANSLATE	gives directory names for ppn's and vice versa	dev:<directory> or [project-programmer number]	---
TYPE	prints files on your terminal	filespecs	---
UNATTACH	disengages another job from its terminal	user name, (job number) (password)	---
UNDELETE	restores deleted files	filespec	---
UNLOAD	unloads a magnetic tape and deassigns the drive	device name	---
VDIRECTORY	DIRECTORY command with subcommands LENGTH, NO HEADING, PROTECTION, SIZE, and TIMES WRITE	(dev:<directory>, filespecs), subcommands	---

APPENDIX C

FILE ATTRIBUTES

This appendix lists the attributes that you can include in a file specification. The DECnet-related attributes are described in detail in the DECnet documentation. Information on file attributes is also contained in the *TOPS-20 User's Guide*, the *TOPS-20 Monitor Calls Reference Manual*, and the *TOPS-20 Tape Processing Manual*.

;A:account — System manager defined account string

;BDATA:user data — DECnet optional binary data

;BLOCK-LENGTH:n — Maximum size of a magnetic tape block (meaningful to programs that perform tape input and output, such as DUMPER)

;BPASSWORD:password — DECnet binary password

;CHARGE:account — DECnet account string

;DATA:user data — DECnet optional data

;EXPIRATION-DATE:date — Date the magnetic tape file can be overwritten

;FORMAT:F,D,S, or U — Magnetic tape record format:

F=fixed-length
D=variable-length
S=spanned
U=undefined

;OFF-LINE — Designation for a file that is off line because of migration or archiving

;P:n — File protection value

;PASSWORD:password — DECnet password

;POSITION:n — File sequence number for magnetic tape positioning

;RECORD-LENGTH:n — Maximum size of a magnetic tape record

;T — Designation for a file that is to be deleted at log-out time (a temporary file)

;USERID:id — DECnet user ID string

FILE ATTRIBUTES

Note that you can issue TOPS-20 commands as an alternative to specifying many of the file attributes. For example, SET FILE PROTECTION, rather than the P attribute, can be used to set the file protection. Also, such commands as INFORMATION FILE-STATUS and DIRECTORY (with the EVERYTHING subcommand) display your file attribute settings.

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